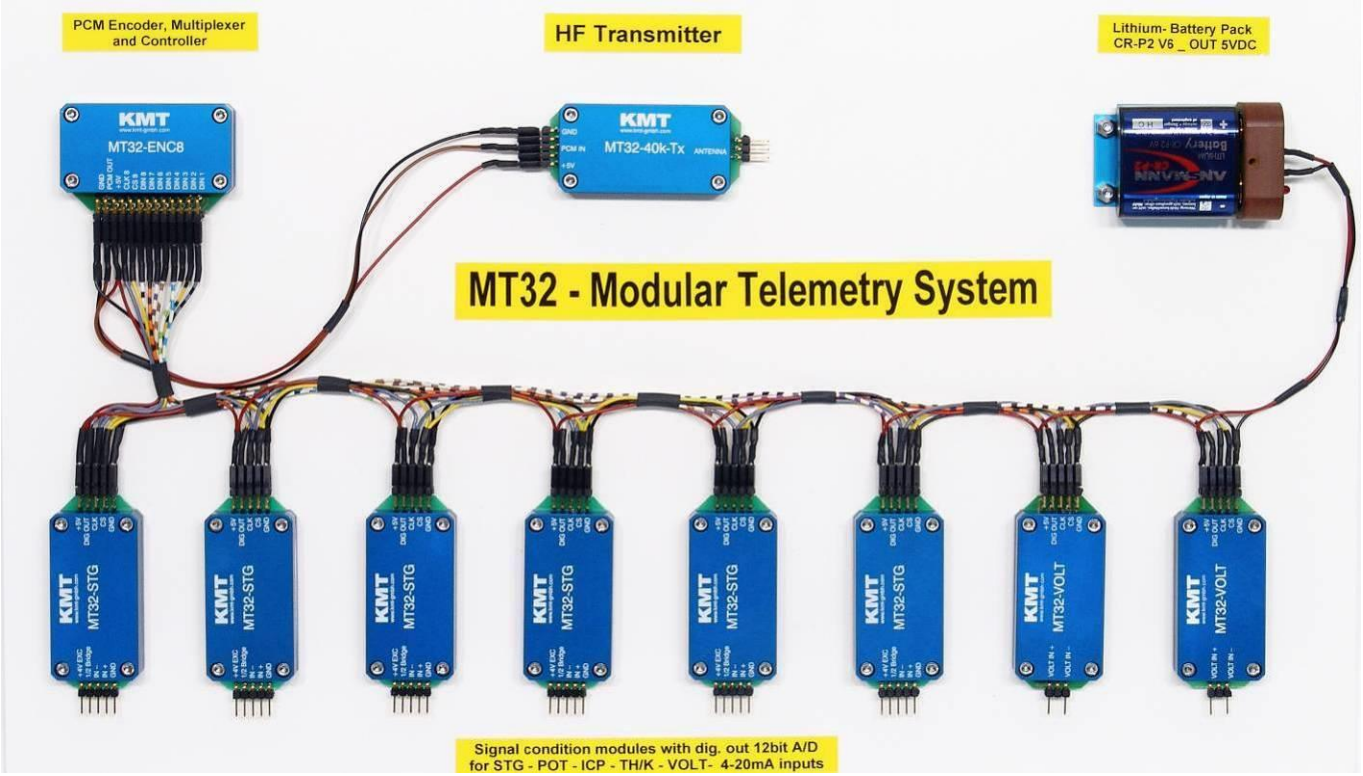
KMT - Kraus Messtechnik GmbH

Gewerbering 9, D-83624 Otterfing, Germany, ☎ 08024-48737, Fax. 08024-5532
Home Page: http://www.kmt-telemetry.com, Email: info@kmt-telemetry.com

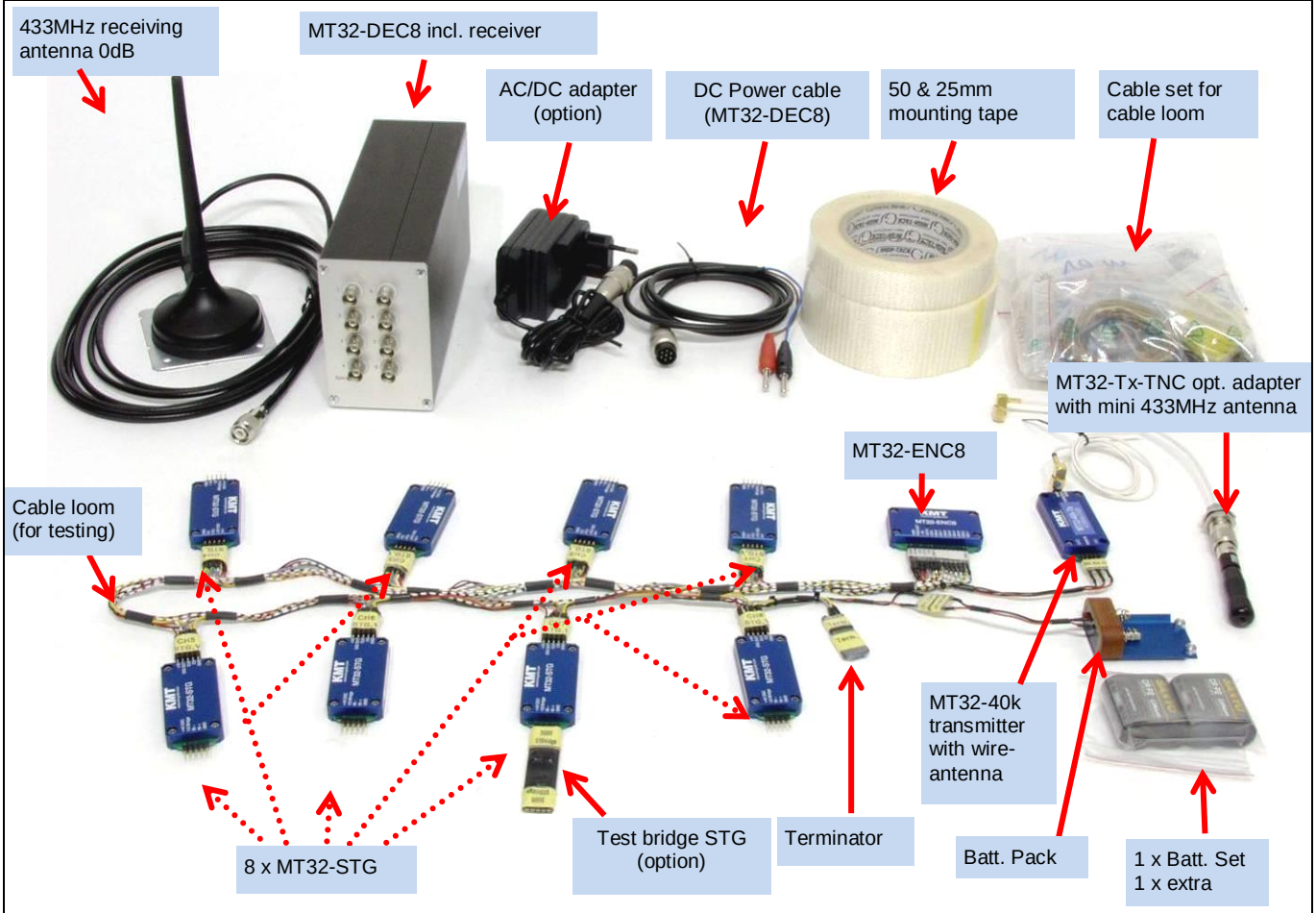
MT32 Telemetry

User Manual


PCM Encoder, Multiplexer and Controller
HF Transmitter
Lithium- Battery Pack CR-P2 V6 _ OUT 5VDC
MT32-ENC8
MT32-40k-Tx
MT32 - Modular Telemetry System
MT32-STG
MT32-VOLT
Signal condition modules with dig. out 12bit A/D for STG - POT - ICP - TH/K - VOLT- 4-20mA inputs

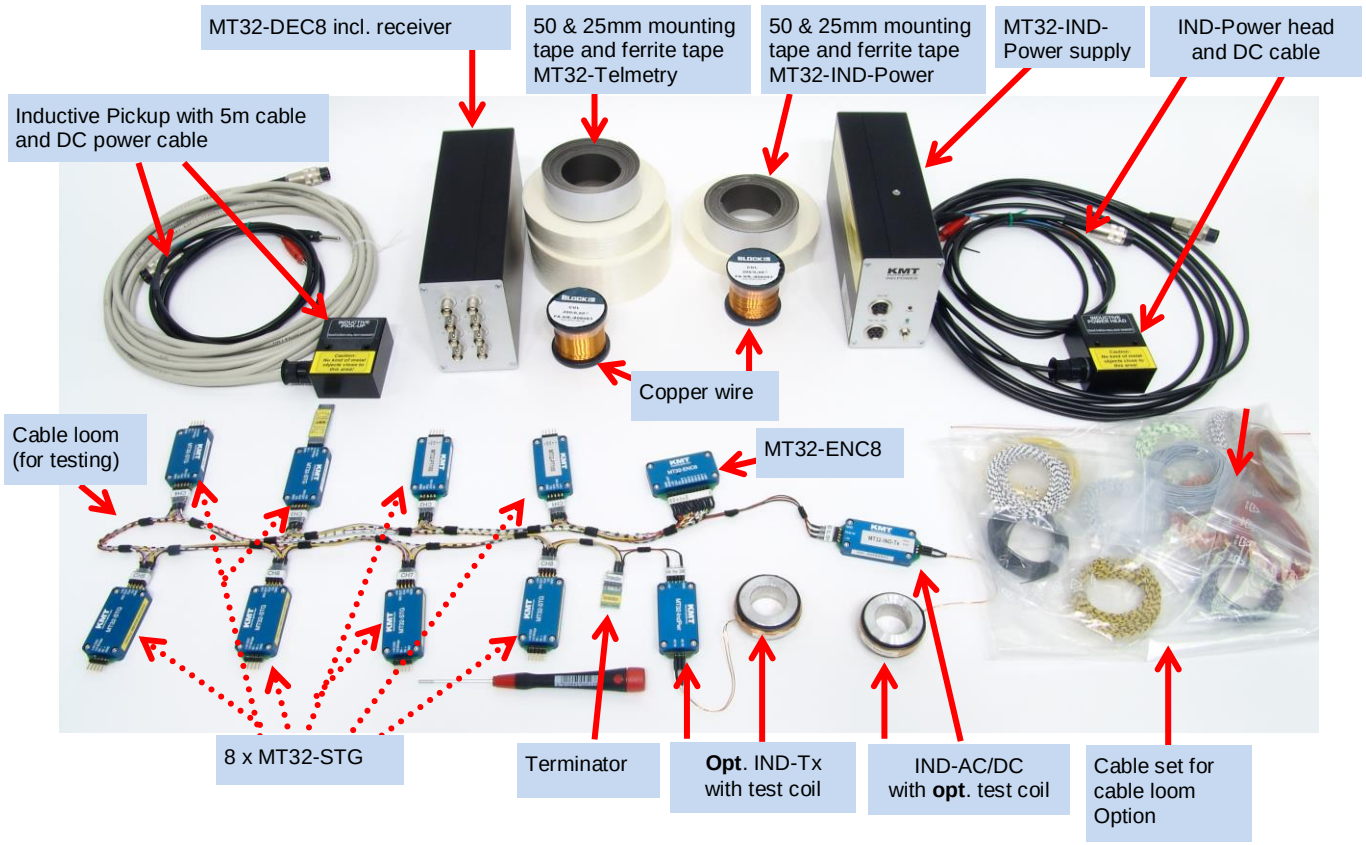
INSTRUCTIONS FOR QUALIFIED PERSONNEL ONLY!

MT32 - 8 channel set with battery power and 40kbit radio transmitter



Order example: MT32-8CH-40k, 8xSTG, BATT, BW 8x0-95Hz		
8	**MT32-STG**	**Signal conditioning module for strain gages with digital data acquisition**
1	**MT32-ENC8**	**Encoder for up to 8 acquisition module**
1	**MT32-40k-10**	**ISM-Band telemetry transmitter and receiver (distance up to 0.5 to 10m)**
1	**BATT-PACK**	**Battery pack**
1	**BATT-SET**	**Battery set**
1	**MT32-DEC8**	**Decoder for 8 channels, Output 8 x BNC**
1	**AC/DC**	**AC/DC power supply for DEC8 (Optional)**
8	**MT32-STG**	**Signal conditioning module for strain gages with digital data acquisition**

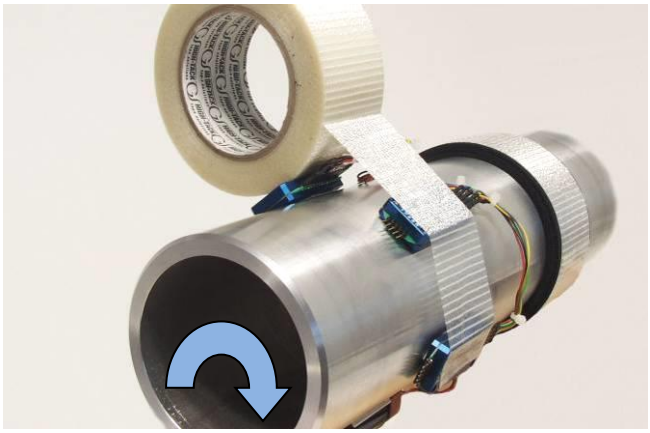
MT32 - 8 channel set with inductive power and 2560kbit inductive transmitter


MT32-DEC8 incl. receiver
50 & 25mm mounting tape and ferrite tape MT32-Telmetry
50 & 25mm mounting tape and ferrite tape MT32-IND-Power
MT32-IND-Power supply
IND-Power head and DC cable
Inductive Pickup with 5m cable and DC power cable
Copper wire
Cable loom (for testing)
MT32-ENC8
8 x MT32-STG
Terminator
Opt. IND-Tx with test coil
IND-AC/DC with opt. test coil
Cable set for cable loom Option

Order example: MT32-8CH-IND-TX-RX, 8xSTG, IND-PWR, BW 8x0-6000Hz		
8	**MT32-STG**	**Signal conditioning module for strain gages with digital data acquisition**
1	**MT32-ENC8**	**Encoder for up to 8 acquisition module**
1	**MT32-IND-RX-TX**	**Inductive telemetry 2560kbit transmitter and receiver (distance 0.1m)**
1	**IND-PWR-L**	**Inductive power supply**
1	**MT32-DEC8**	**Decoder for 8 channels, Output 8 x BNC**
2	**AC/DC**	**AC/DC power supply (1x for DEC8, 1x for IND-PWR)**

Installation of the MT32 Modules

Attach all the MT32 modules on the final position on the shaft using the “tesa® Power-Strips® Mini”.

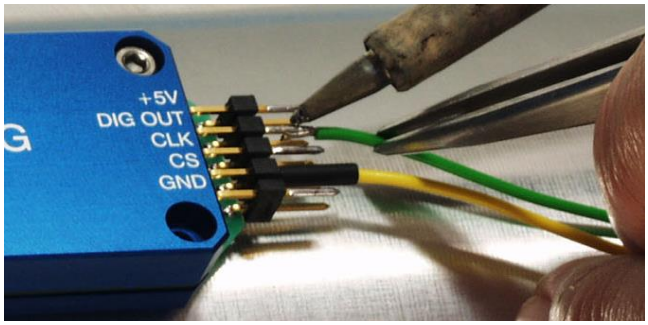


Fix all MT32 modules with at least 10 layers of the special mounting tape around the shaft. According to the shafts RPM and diameter it’s particularly paid attention to safe mounting of the components. The manufacturer doesn’t accept liability for damages, which results from not sufficiently attachment of the individual components. The provided cable harness and the tape are only for test purposes, in order to test the electrical function of the units in the idle state of the shaft.

During the rotation test appropriate safety tools are to be attached.
The entire installation may be used only by authorized persons. By using tape for the attachment, it has to be used in the direction of rotation of the shaft and the end has to be secured against removing. Only non-elastic tapes with high tensile strength have to be used for pre-fixing. **Add. use horse clamps for final fixing!!**

The individual components are to be distributed in such a way on the shaft that imbalances will avoid.

hose clamps



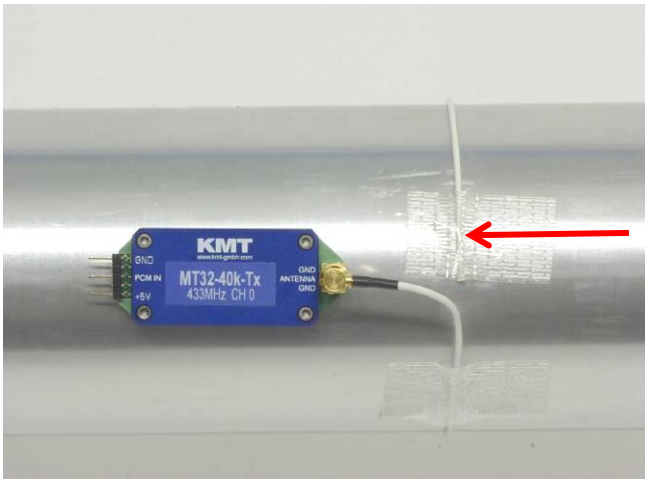
All cable connections soldered!

The user has to pay attention to connect the wires to the correct pins - the units have no reverse-connect protection!

MT32 to consider at assembling

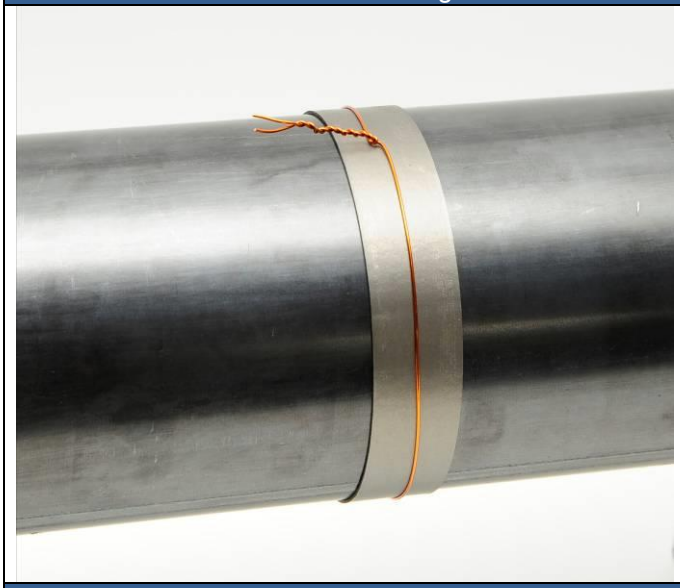
According to the shafts RPM and diameter is particularly paid attention to safe mounting of the components. The manufacturer doesn't accept liability for damages, which results from not sufficiently attachment of the individual components. The provided cable harness and the tape are only for test purposes, in order to test the electrical function of the units in the idle state of the shaft.
During the rotation test appropriate safety tools are to be attached. The entire installation may be used only by authorized persons. By using tape for the attachment, it has to be used in the direction of rotation of the shaft and the end has to be secured against removing. Only non-elastic tapes with high tensile strength have to be used.
The individual components are to be distributed in such a way on the shaft that imbalances will avoid. All wire connections should be soldered. The user has to pay attention to the correct polarity of the cables – the units have no reverse-connect protection!
Transmitting antennas and sensors should not be installed next to each other. To ensure a reliable function, the receiving antenna should be positioned in such a way that all LEDs lights up at the field level display on the receiver.

Don't plug any modules if Power is ON!!! First power OFF!!

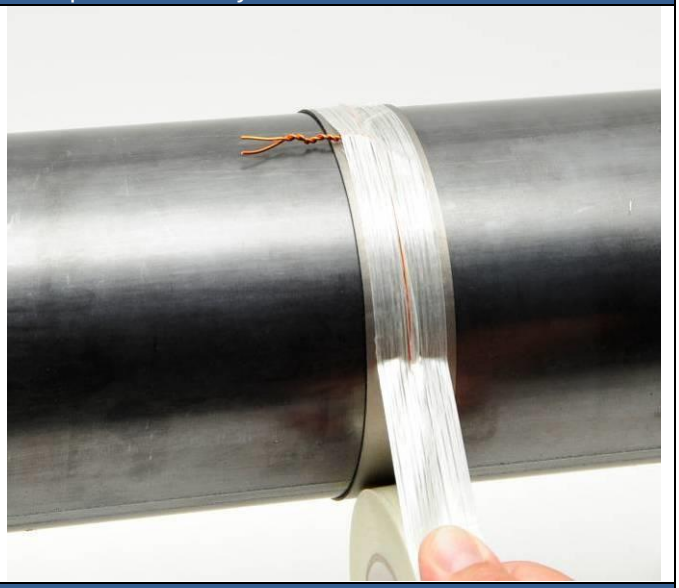
MT32-40-320-640 or 1280k	Installation of the radio transmitter on a shaft
	Cable Red = +5V Cable Black = GND (Ground) Cable Brown = PCM In Cable White = Wire antenna All cable connections should be soldered.
	Mount the cable antenna exactly one winding around the shaft and fix all with 3 windings mounting tape – finish! The cable antenna can extend or shorten depending upon requires! (isolate the solder connection, if you extend the wire antenna cable!)
 	This coaxial adapter (**MT32-40k-Tx-TNC-adapter**) makes it possible to connect a 433 MHz antenna with TNC connector for point to point applications. (option) 433 MHz transmitting antenna 0dB with magnetic foot (option)

MT32-IND-TX-RX with 45MHz carrier!
With 45MHz carrier is only 1x winding necessary!

Attach for electromagnetic insulation “Ferrite Tape” **2 x one** layer around the shaft.

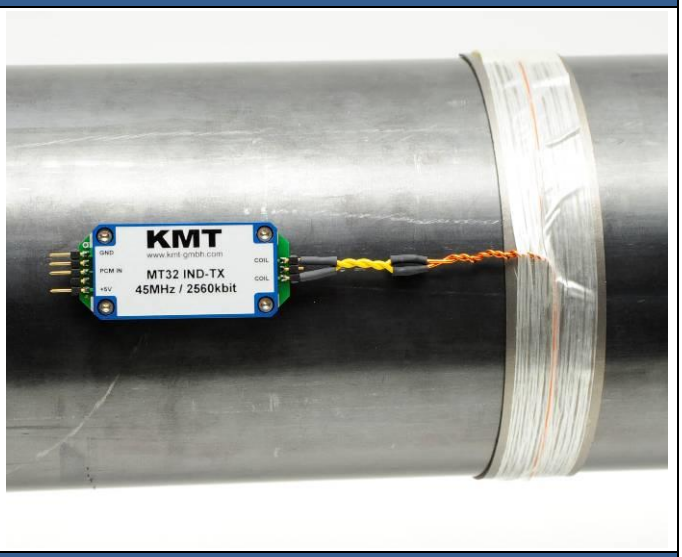


Make transmitting coil with 1x winding and twisted the end of wire. Use CUL 1mm wire
(CUL = Enamelled copper wire)



Fixed it with 3 layers mounting tape

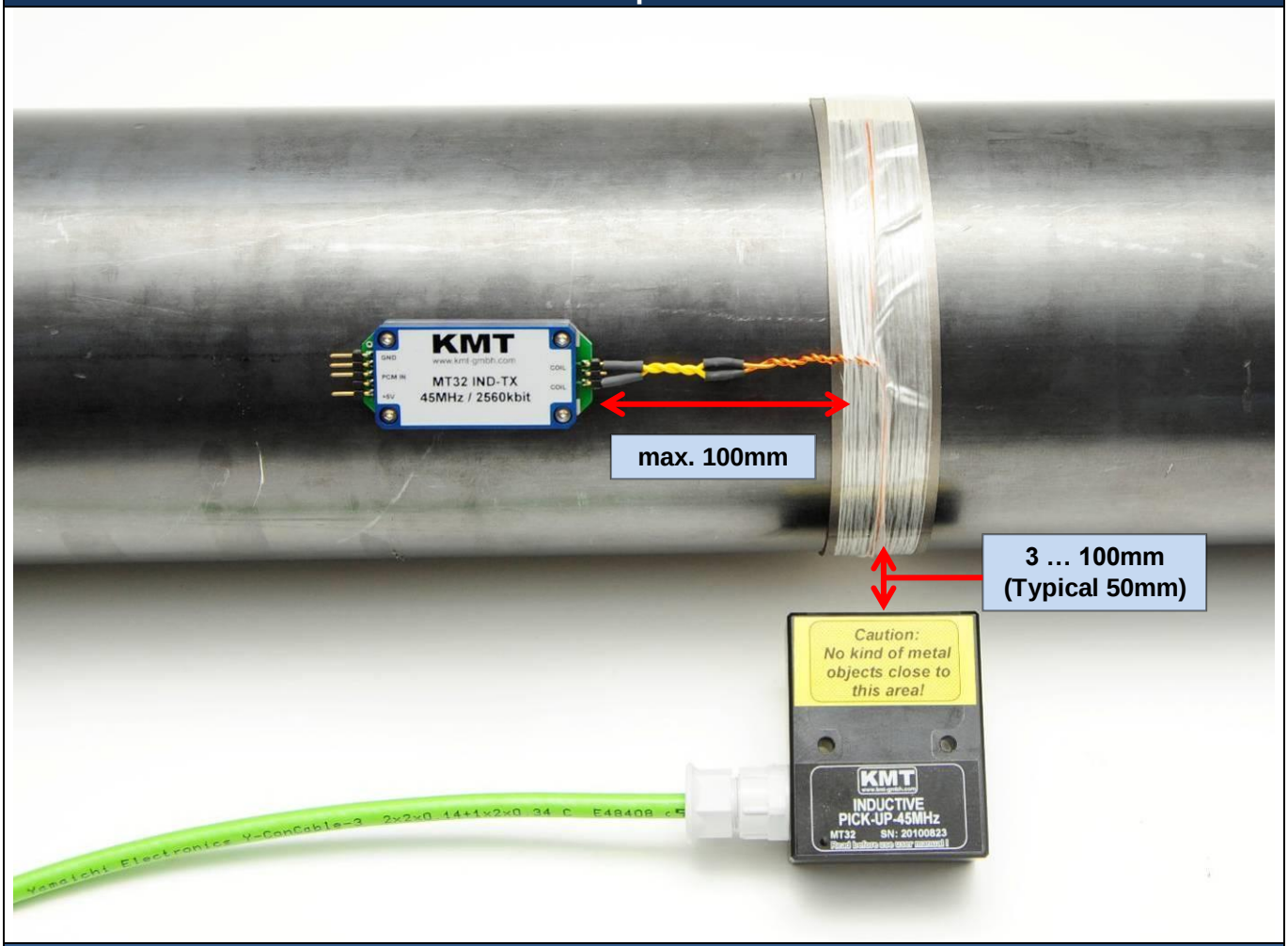
Extend the CUL wire flexible 0.14-0.25mm wire
(to decouple the inflexible 1mm wire!)



Twisted also the flexible wire and solder it on the MT32-IND-Tx (isolate all solder points with shrink tubing)

MT32-IND-TX-RX with 45MHz carrier!

Pickup head



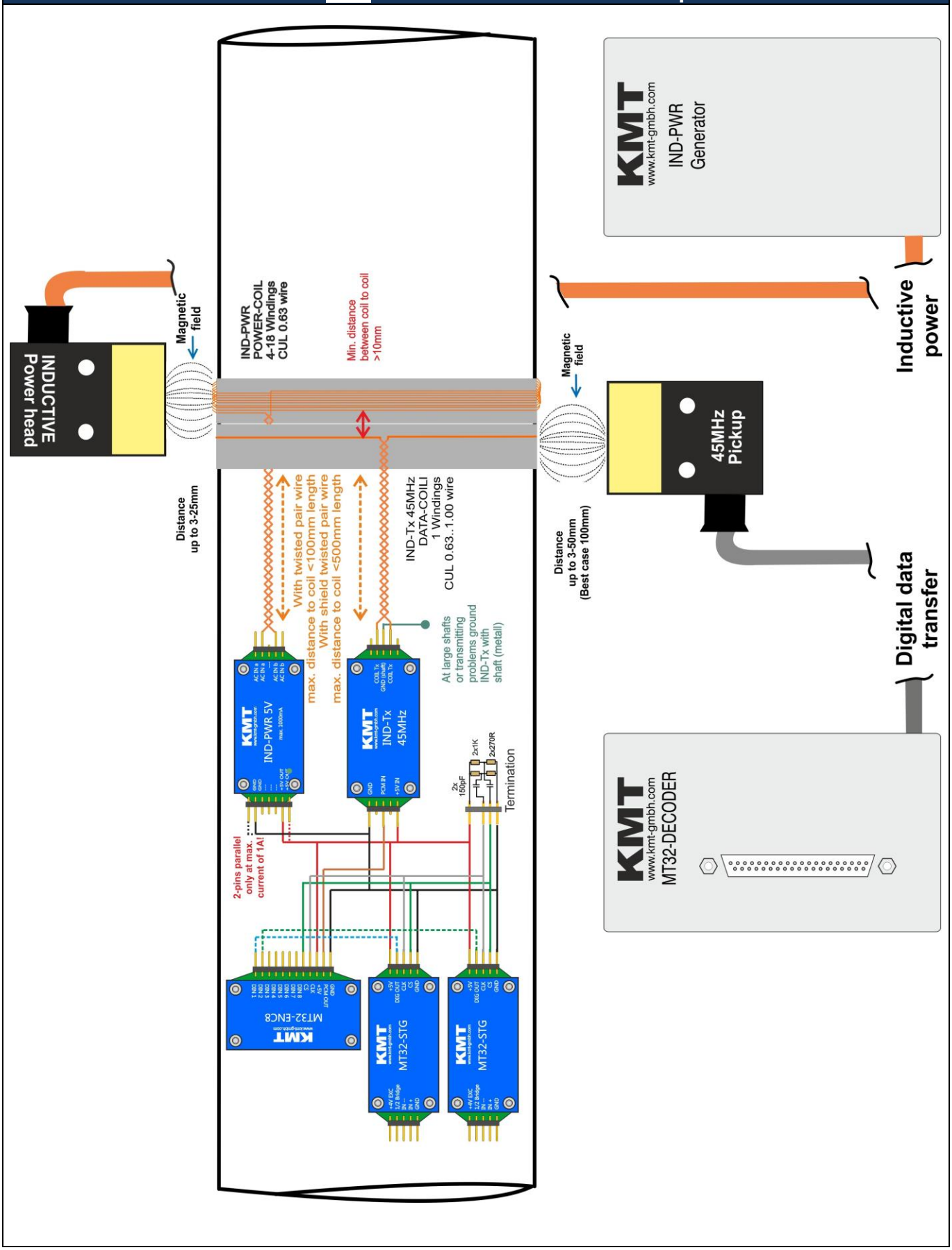
Inductive Pick-Up head mount in this position! Distance between head and Tx coil can be up to 100mm
Typical 50mm, distance deepens of application!!

To avoid transmitting problems, the transmitter module must be close the transmitting antenna!
The cables (PCM/GND/+5V) between MT32-IND-TX 45MHz and ENC8/16 can be 1000mm long!

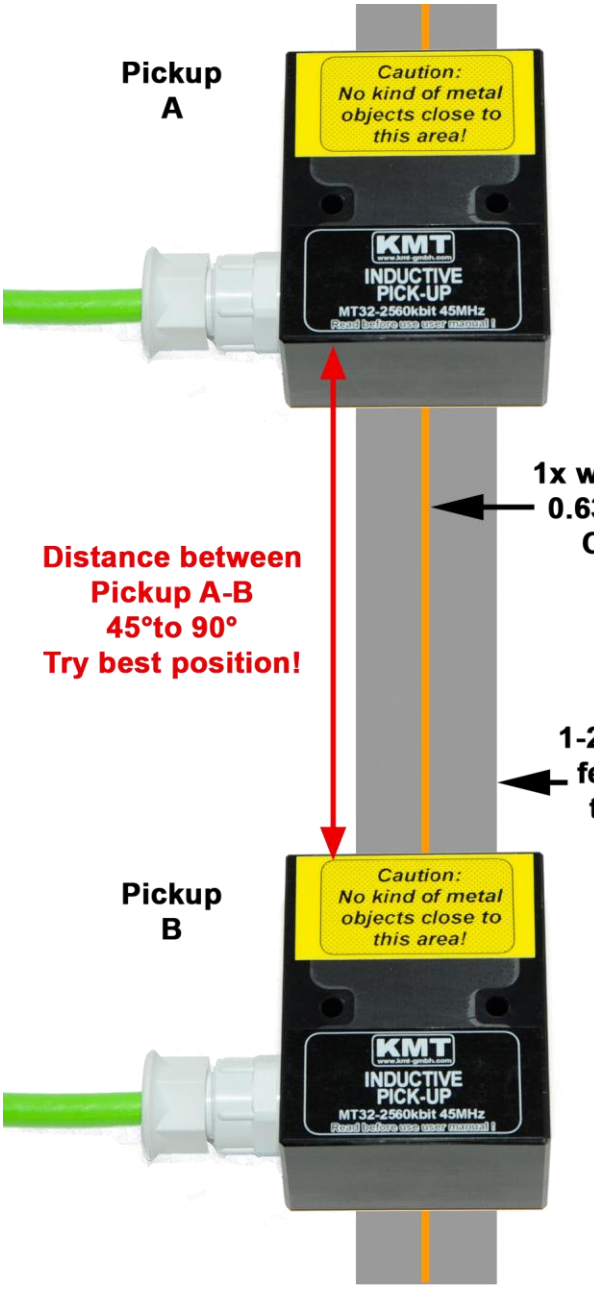
CAUTION:
If you want to install also an inductive power coil close to the data coil, the minimal distance must be <10mm! (distance between IND-PWR coil to IND-DATA coil)

MT32 Block diagram

IND-TX-RX with 45MHz carrier and inductive power

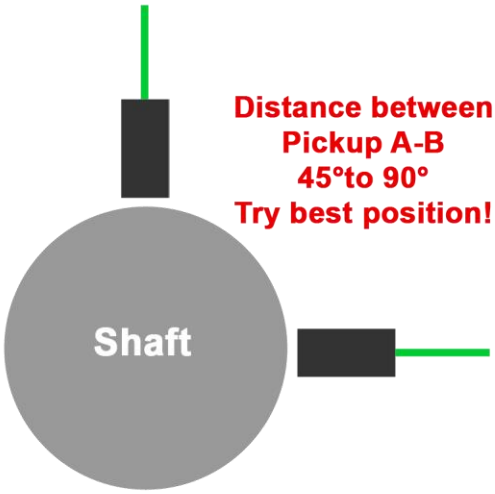


MT32 Block diagram IND-TX-RX with 45MHz diversity
with two 45MHz carrier pickup heads at large shafts (>500mm)



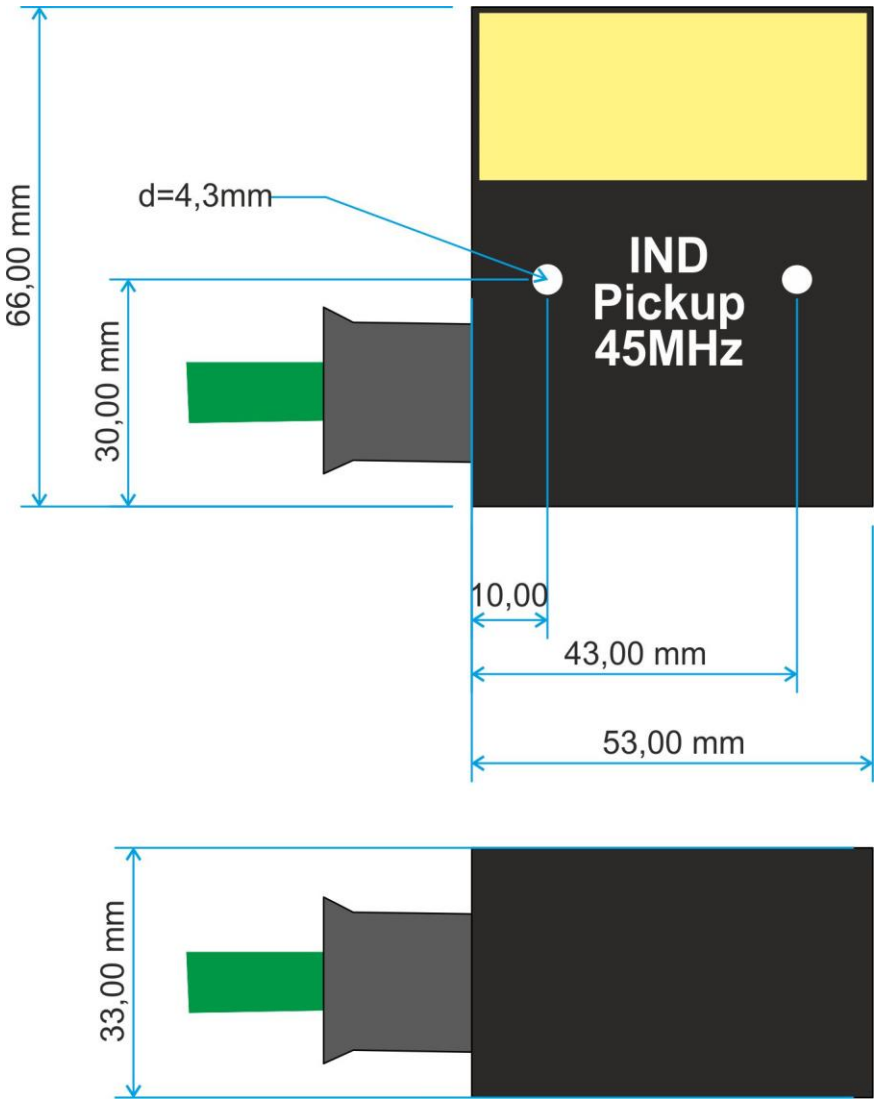
At shaft diameter lager then >500mm diameter, you can get zero points in the 45MHz antenna. To avoid transmitting loss, we recommend using a second pickup head! The distance between two pickup heads must be 45° to 90°.

On the MT-DECODER (receiver) you can see the yellow status LED of Pickup. At good magnetic level, the LED is bright and Pickup is active.

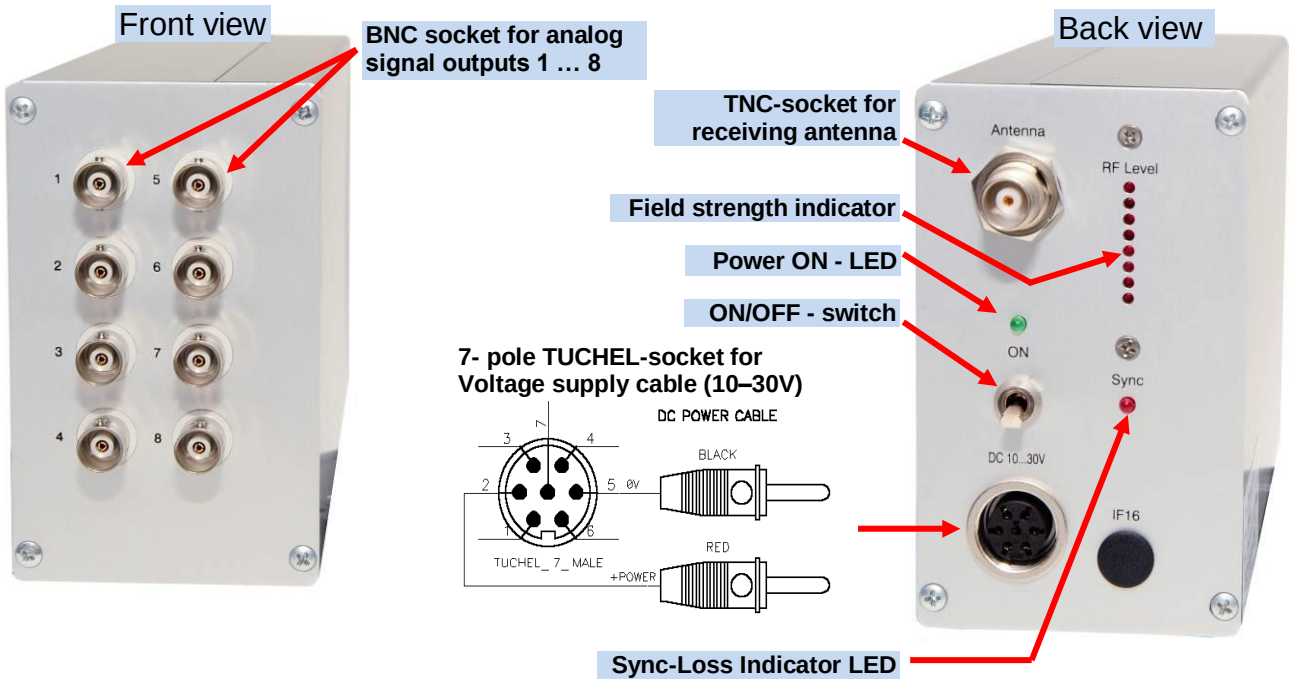


Picture of IND-PICKUP-HEAD 45MHz

Dimensions of IND-PICKUP-HEAD 45MHz



MT32-DEC8 Receiver unit for 8 Channels output via BNC (radio telemetry version)



System Parameters:

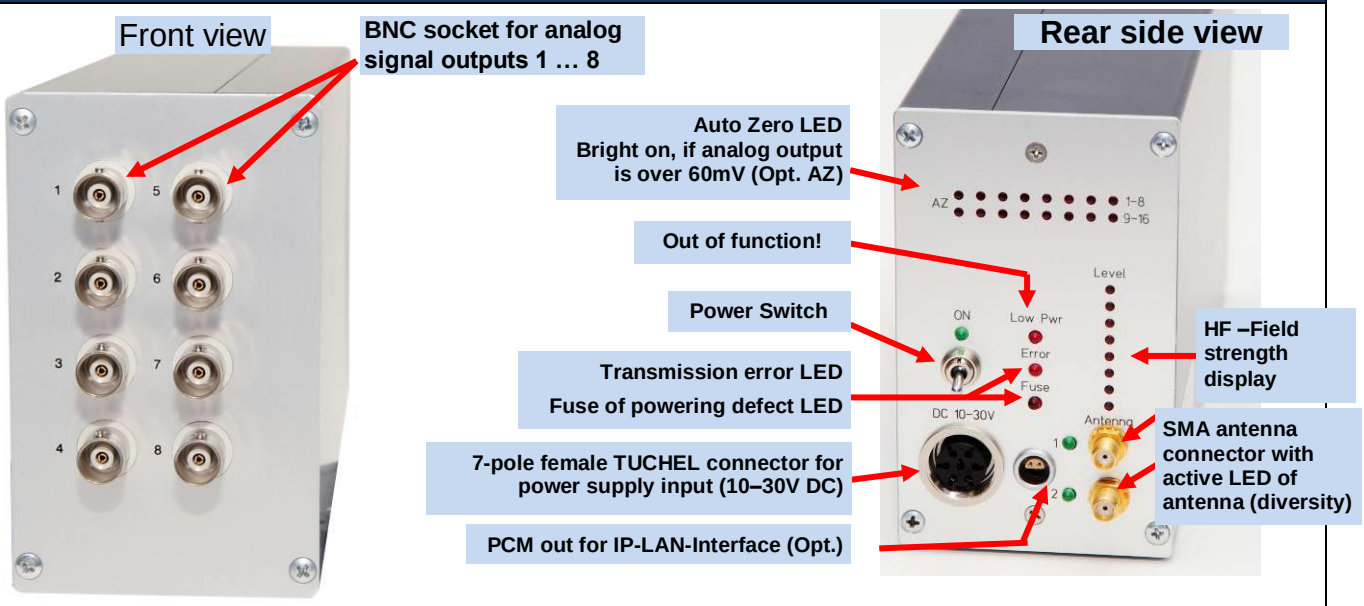
Channel:	8 analog outputs via (BNC) +/-5V
Resolution:	12 bit D/A converter, with smoothing filter
Dynamic:	72dB
Power supply input:	10-30 VDC
Current consumption:	300mA at 10V, 100mA at 30V

Cut off frequency from anit-aliasing filter (-3dB) Scanning rate (red)		
Bit rate	**4 Channels**	**8 Channels**
1280 kbit/s	6000 Hz (24615 Hz)	3000 Hz (12800 Hz)
640 kbit/s	3000 Hz (12308 Hz)	1500 Hz (6400 Hz)
320 kbit/s	1500 Hz (6154 Hz)	750 Hz (3200 Hz)
40 kbit/s	190 Hz (770 Hz)	95 Hz (400 Hz)

Analog signal bandwidth:	
Dimensions:	205 x 105 x 65mm
Weight:	1.00 kg without cables and antenna
Overall system accuracy between encoder input and decoder output:	+/-0.25% without sensor influences, with CT-TH-K-ISO only +/-1%
Environmental	
Operating:	-20 … +70°C
Humidity:	20 ... 80% not condensing
Vibration:	5g Mil Standard 810C, Curve C
Static acceleration:	10g in all directions
Shock:	100g in all directions

Technical specifications are subject to change without notice

MT32-DEC8 Receiver unit for 8 Channels output via BNC (radio telemetry version with diversity option)



System Parameters:

Channel:	8 analog outputs via (BNC) +/-5V, Optional +/-10V
Resolution:	12 bit D/A converter, with smoothing filter
Dynamic:	72dB
Power supply input:	10-30 VDC
Current consumption:	300mA at 10V, 100mA at 30V

Analog signal bandwidth:

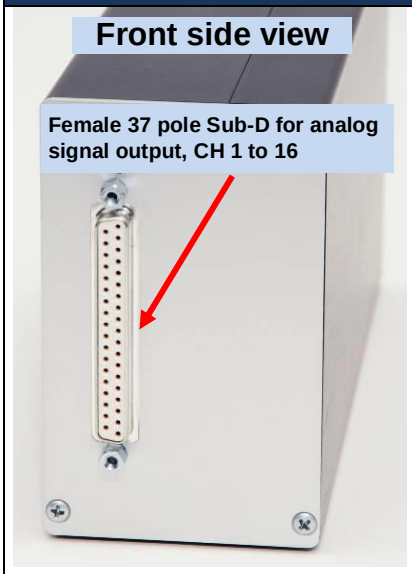
Cut off frequency from anit-aliasing filter (-3dB) Scanning rate (red)		
Bit rate	**4 Channels**	**8 Channels**
1280 kbit/s	6000 Hz (24615 Hz)	3000 Hz (12800 Hz)
640 kbit/s	3000 Hz (12308 Hz)	1500 Hz (6400 Hz)
320 kbit/s	1500 Hz (6154 Hz)	750 Hz (3200 Hz)
40 kbit/s	190 Hz (770 Hz)	95 Hz (400 Hz)

Dimensions:	205 x 105 x 65mm
Weight:	1.00 kg without cables and antenna
Overall system accuracy between encoder input and decoder output:	+/-0.25% without sensor influences, with CT-TH-K-ISO only +/-1%
Environmental	
Operating:	-20 … +70°C
Humidity:	20 ... 80% not condensing
Vibration:	5g Mil Standard 810C, Curve C
Static acceleration:	10g in all directions
Shock:	100g in all directions

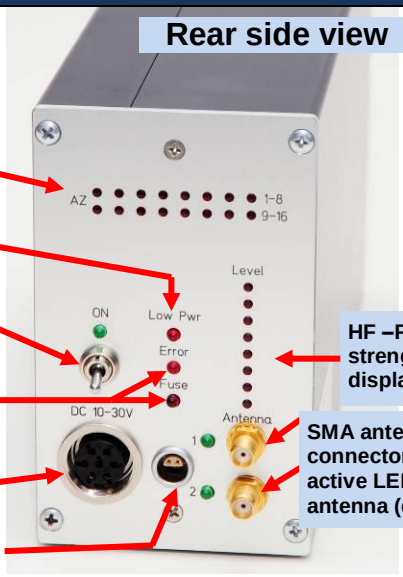
Technical specifications are subject to change without notice

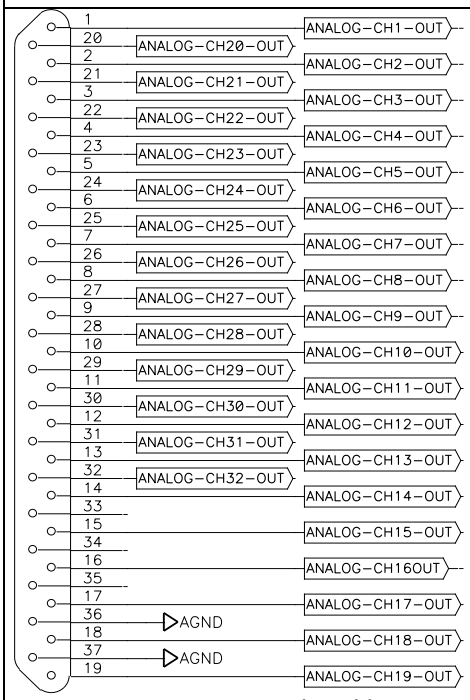
MT32-DEC16/32 Receiver unit for max 16/32 Channels output via 37 pol. Sub D (radio telemetry version with diversity option)

Front side view

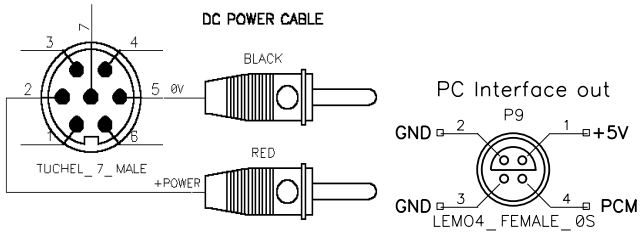


Rear side view





Plug-side

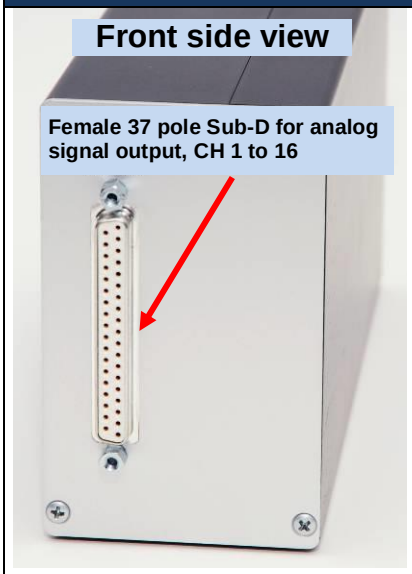


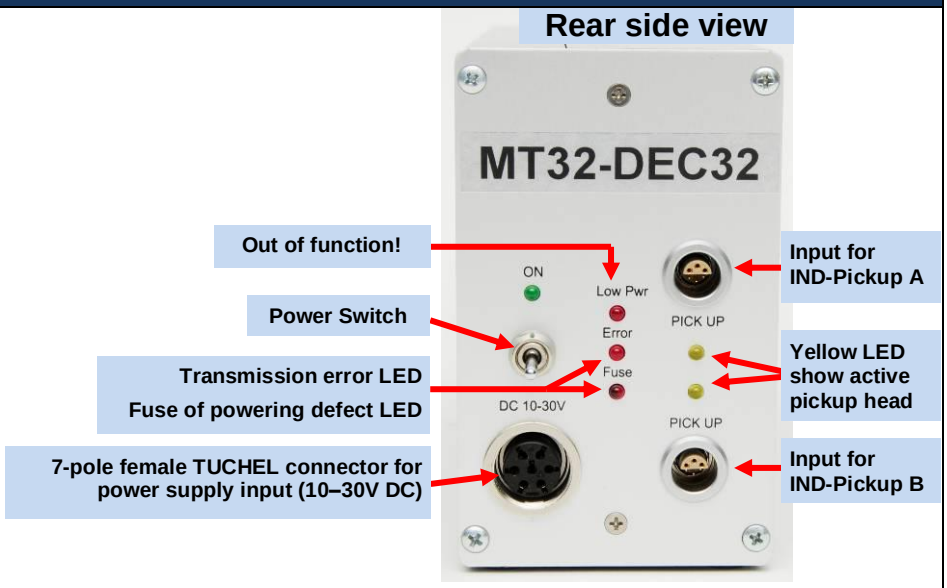
Optional BNC16 Box. Connect on 37pol Sub-D

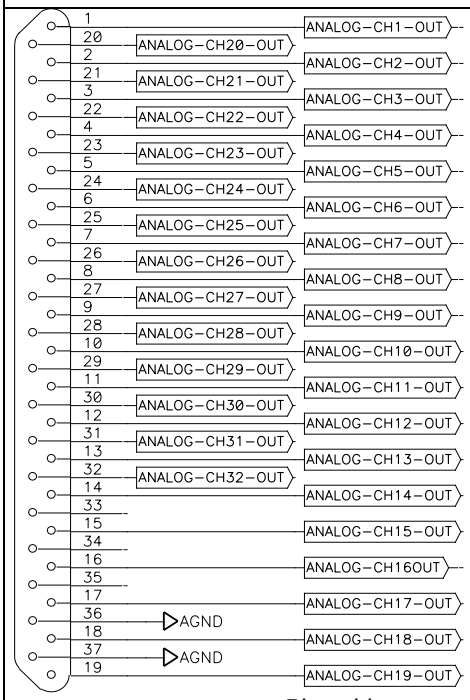
MT32-DEC16 System Parameters:

Channel:	16x +/-5V (+/-10V Option) analog outputs via Sub-D male socket
Resolution:	12 bit D/A converter, with smoothing filter
Dynamic:	72dB
Power supply input:	10-30 VDC, power consumption 10 Watt
Current consumption:	300mA at 10V, 100mA at 30V
Transmission:	Digital PCM Miller Format – FSK, diversity receiver
Dimensions:	205 x 105 x 65mm
Weight:	1.25 kg without cables and antenna
Overall system accuracy between encoder input and decoder output:	+/-0.25% without sensor influences
Environmental	
Operating:	-20 … +70°C
Humidity:	20 ... 80% not condensing
Vibration:	5g Mil Standard 810C, Curve C
Static acceleration:	10g in all directions
Shock:	100g in all directions

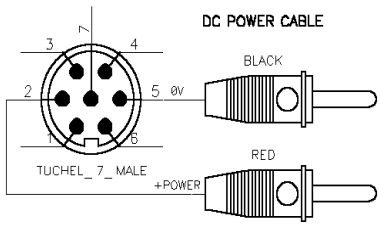
MT32-DEC16/32 Receiver unit for max 16/32 Channels output via 37 pol. Sub D (inductive pickup head with diversity option)







Plug-side



Optional BNC16 Box. Connect on 37pol Sub-D

CT16- -DEC16 System Parameters:

Channel:	16x +/-5V (+/-10V Option) analog outputs via Sub-D male socket
Resolution:	12 bit D/A converter, with smoothing filter
Dynamic:	72dB
Power supply input:	10-30 VDC, power consumption 10 Watt
Current consumption:	300mA at 10V, 100mA at 30V
Transmission:	Digital PCM Miller Format – FSK, diversity receiver
Dimensions:	205 x 105 x 65mm
Weight:	1.25 kg without cables and antenna
Overall system accuracy between encoder input and decoder output:	+/-0.25% without sensor influences
Environmental	
Operating:	-20 … +70°C
Humidity:	20 ... 80% not condensing
Vibration:	5g Mil Standard 810C, Curve C
Static acceleration:	10g in all directions
Shock:	100g in all directions

MT32-STG-V1 Acquisition module for strain gages (STG)

MT32-STG-V1

Bridge types: Full and half
(quarter bridge only with external completions resistor!)

Bridge resistance: ≥ 350Ω for full and half

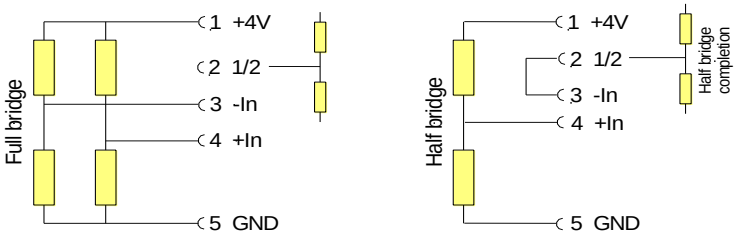
Excitation voltage: 4V fixed, 20mA max.

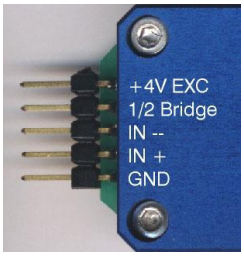
Gain: 200 or **1000** (factory setting)

Gain and STG- ensitivity (output +/-5V at decoder)	
Gain 200 = +/ 6.25mV/V	Gain 1000 = +/-1.25mV/V

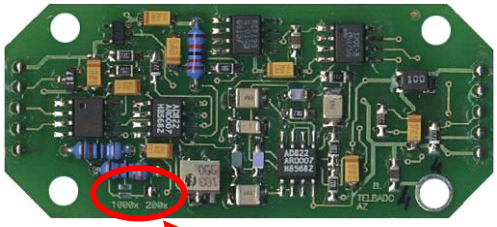
Offset compensation: By potentiometer or Auto Zero **(80% of full range)**

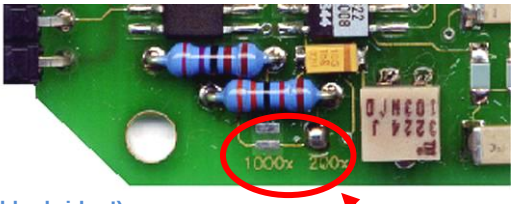
STG pin assignment





Gain setting





(Selectable by solder bridge!)

The closed solder bride determines the enabled gain of 200 or 1000.

For changing the gain in this example from 1000 to 200 - open the “1000x” and close the “200x” solder bridge.

Offset adjustment via Poti

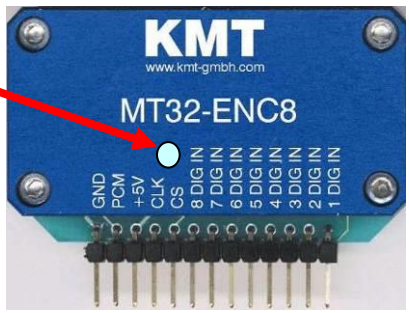
STG - Sensor →

→ **MT32-ENC8**

The offset adjustment takes place via this screw using a suitable screw driver

Offset adjustment via Auto Zero at the ENC8

Auto Zero Switch



Auto Zero display

LED Off = AZ successful
LED On = AZ not successful

MT32-STG-V2 Acquisition module for strain gages (STG)

MT32-STG-V2

Bridge types: Full and half
(quarter bridge only with external completions resistor!)

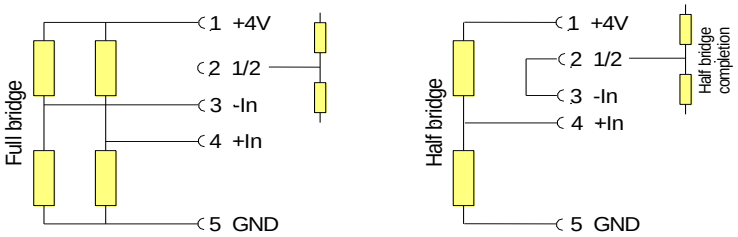
Bridge resistance: ≥ 350Ω for full and half
Excitation voltage: 4V fixed, 20mA max.

Gain: (factory setting) 250-500-**1000**-2000 or
(specify at order) 1000-2000-4000-8000

Gain and STG-Sensitivity (output +/-5V at decoder)	
Gain 250 = +/-5mV/V	Gain 2000 = +/-0.625mV/V
Gain 500 = +/-2.5mV/V	Gain 4000 = +/-0.3125mV/V
Gain 1000 = +/-1.250mV/V	Gain 8000 = +/-0.15625 mV/V

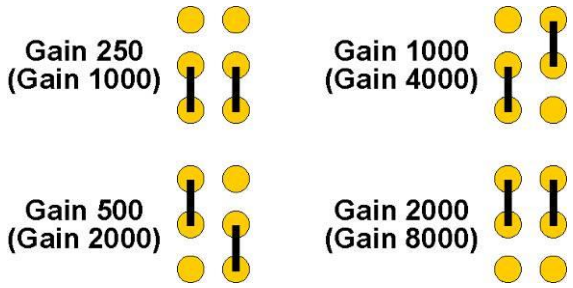
Offset compensation: By potentiometer or
Auto Zero **(80% of full scale)**

STG pin assignment



Gain setting

The jumper determines the enabled gain between 250-500-**1000**- and 2000 (standard) or 1000-2000-4000-8000 (on request)



Gain 1000-2000-4000-8000 on request!

Offset adjustment via Poti

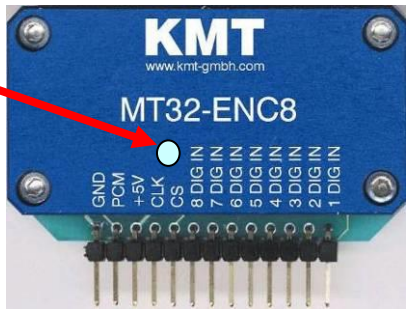
STG - Sensor

MT32-ENC8

The offset adjustment takes place via this screw using a suitable screw driver

Offset adjustment via Auto Zero at the ENC8

Auto Zero Switch



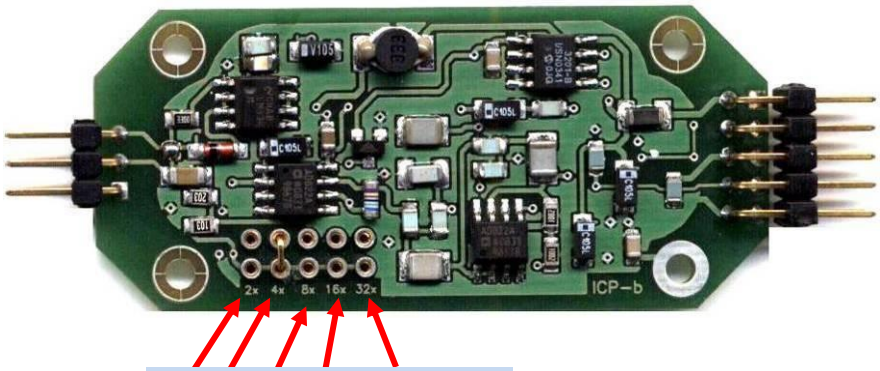
Auto Zero display

LED Off = AZ successful
LED On = AZ not successful

MT32-ICP Acquisition module for ICP

MT32-ICP
For ICP® sensor inputs
(Max. input range at gain 2x = ±2.5V)
Current exc. 4mA fixed
(Optional 1mA)
Signal gain x 2, 4, 8, 16 and 32
(Optional x 1, 2, 4, 8 and 16)
Signal bandwidth 3 Hz up to 24000Hz*
(*deepens of the max. cut of frequency)
Resolution 12bit = 72dB dynamic range

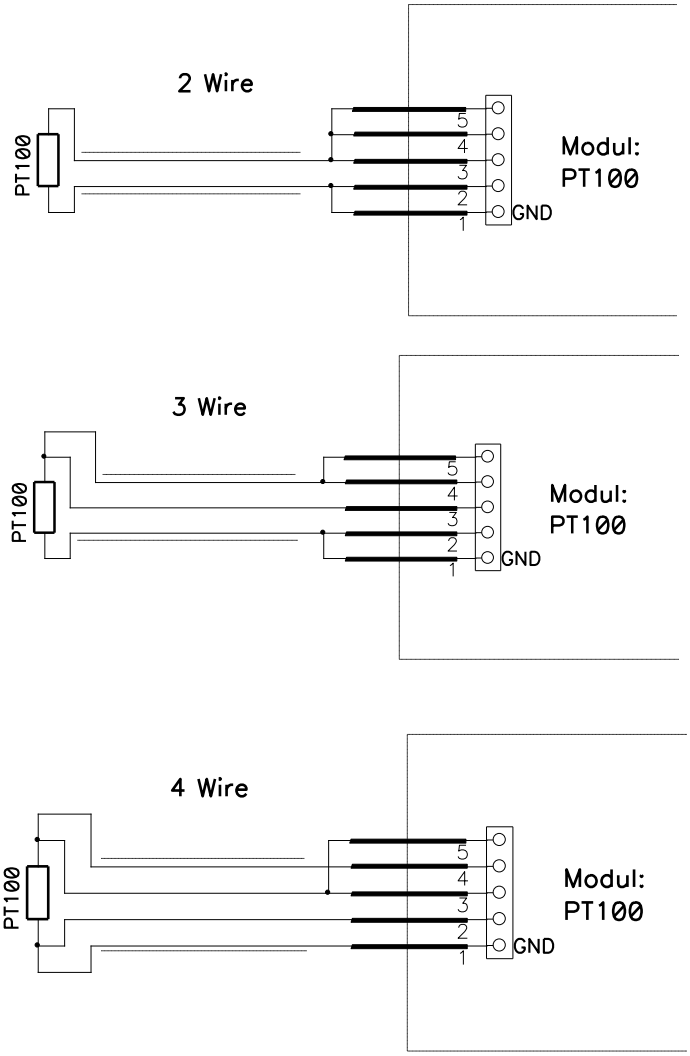
Gain setting



2x, 4x, 8x, 16x, or 32x Gain

MT32-PT100 Acquisition module for PT100

MT32-PT100
For thermo resistors
Range -100 …+500 °C
Resolution 12bit = 72dB dynamic range
Accuracy <0.25%



Temperature/Voltage table (+/-0.25% accuracy)

Temperature [°C]	Output [V]	Temperature [°C]	Output [V]	Temperature [°C]	Output [V]
-100	-0,997	150	1,500	400	4,004
-50	-0,497	200	2,001	450	4,498
0	0,001	250	2,501	500	4,999
50	0,499	300	3,001		
100	1,000	350	3,501		

MT32-THK-ISO Acquisition module for TH K-ISO with galvanic isolation!)

MT32-TH K-ISO
For thermo couples type K (***with*** galvanic isolation!)
Range -50 to 1000 °C (other range on request)
Bandwidth 0-10Hz
Resolution 12bit = 72dB dynamic range
Accuracy <1%

Temperature/Voltage table

Temperature [°C]	Output [V]	Temperature [°C]	Output [V]	Temperature [°C]	Output [V]	Temperature [°C]	Output [V]
-50	-0.220	250	1.236	550	2.754	850	4.262
0	0.013	300	1.482	600	3.010	900	4.506
50	0.254	350	1.734	650	3.266	950	4.746
100	0.504	400	1.990	700	3.519	1000	4.980
150	0.752	450	2.242	750	3.766		
200	0.992	500	2.498	800	4.015		

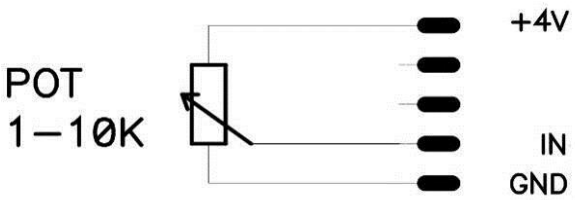
MT32-THK Acquisition module for TH K

MT32-TH (***without*** galvanic isolation!)
For thermo couples type K
Range 0 to 1000 °C (other range on request)
Bandwidth 0-10Hz
Resolution 12bit = 72dB dynamic range
Accuracy <1%

Temperature/Voltage table

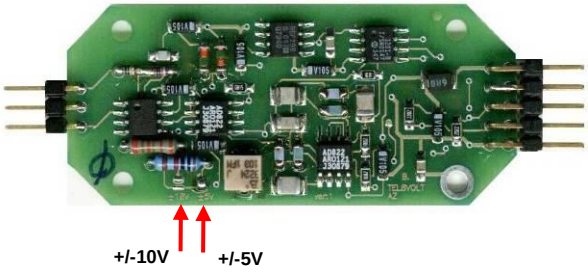
Temperature [°C]	Output [V]	Temperature [°C]	Output [V]	Temperature [°C]	Output [V]	Temperature [°C]	Output [V]
0	-5,003	250	-2,546	500	0,002	750	2,558
50	-4,515	300	-2,044	550	0,515	800	3,061
100	-4,009	350	-1,538	600	1,031	850	3,550
150	-3,516	400	-1,029	650	1,542	900	4,035
200	-3,031	450	-0,515	700	2,052	1000	5,000

MT32-POT Acquisition module for POT



MT-POT
For all potentiometer values 350Ohm to 10kOhm
Excitation: 4 VDC (fixed)
Resolution 12bit = 72dB dynamic range

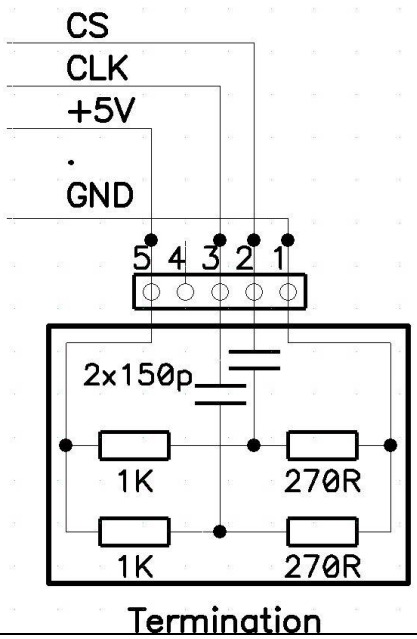
MT32-VOLT Acquisition module for Volt



MT32-VOLT
For high level inputs ±5V or ±10V
Resolution 12bit = 72dB dynamic range

Optional Volt ISO available with galvanic isolated inputs. Connection same!

MT32 Termination of CLK and CS signal

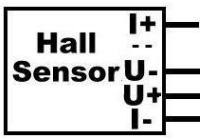


Important:
MT32-Termination-Plug
The CLK and CS signal must be terminated
(from 8-32 channels necessary!)

See pin connection diagram:

MT32-Hall Acquisition module for Hall-Sensor by 10mA: 9,5mV / KG

FH-301-040



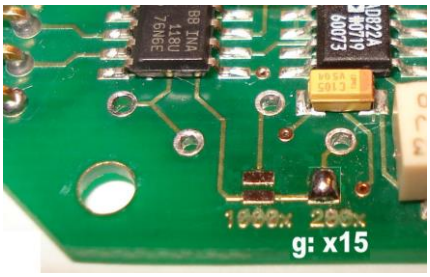
Hall pin assignment

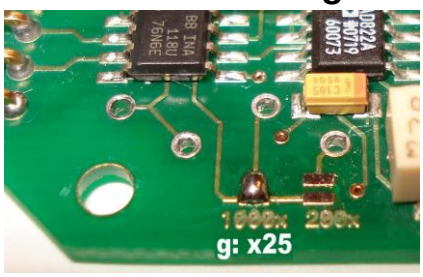
Offset compensation:

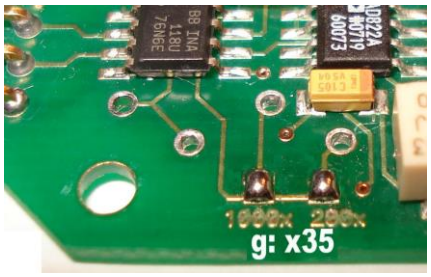
By potentiometer **(80% of full range)**

Resolution 12bit = 72dB dynamic range

Gain setting

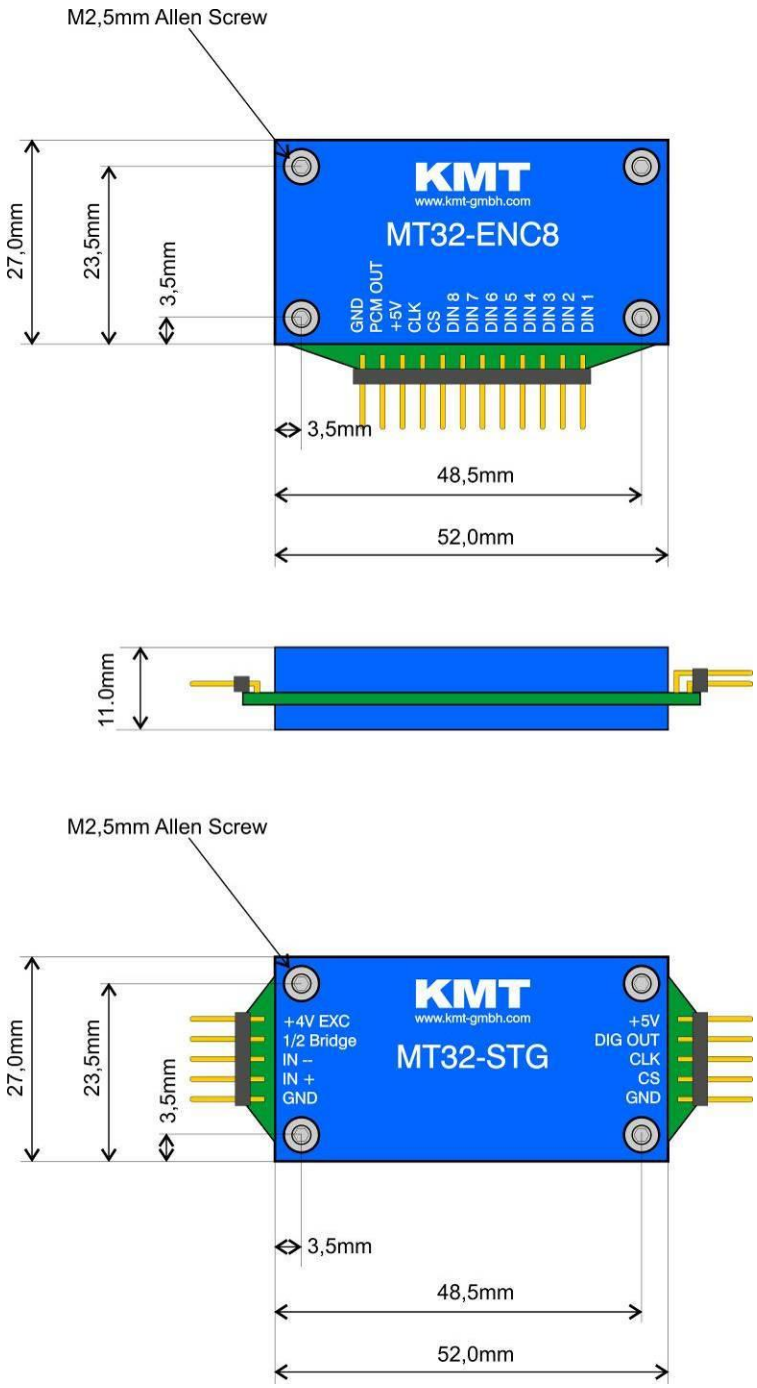




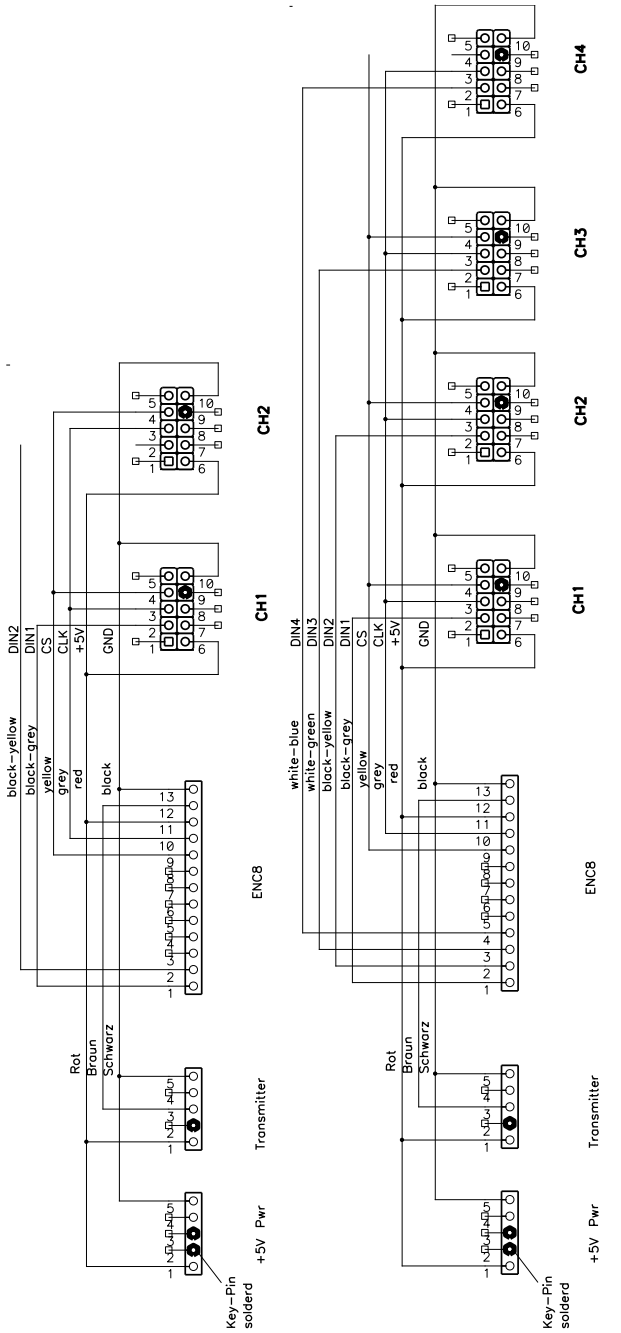


The closed solder bride determines the enabled gain of 15 or 25 or 35

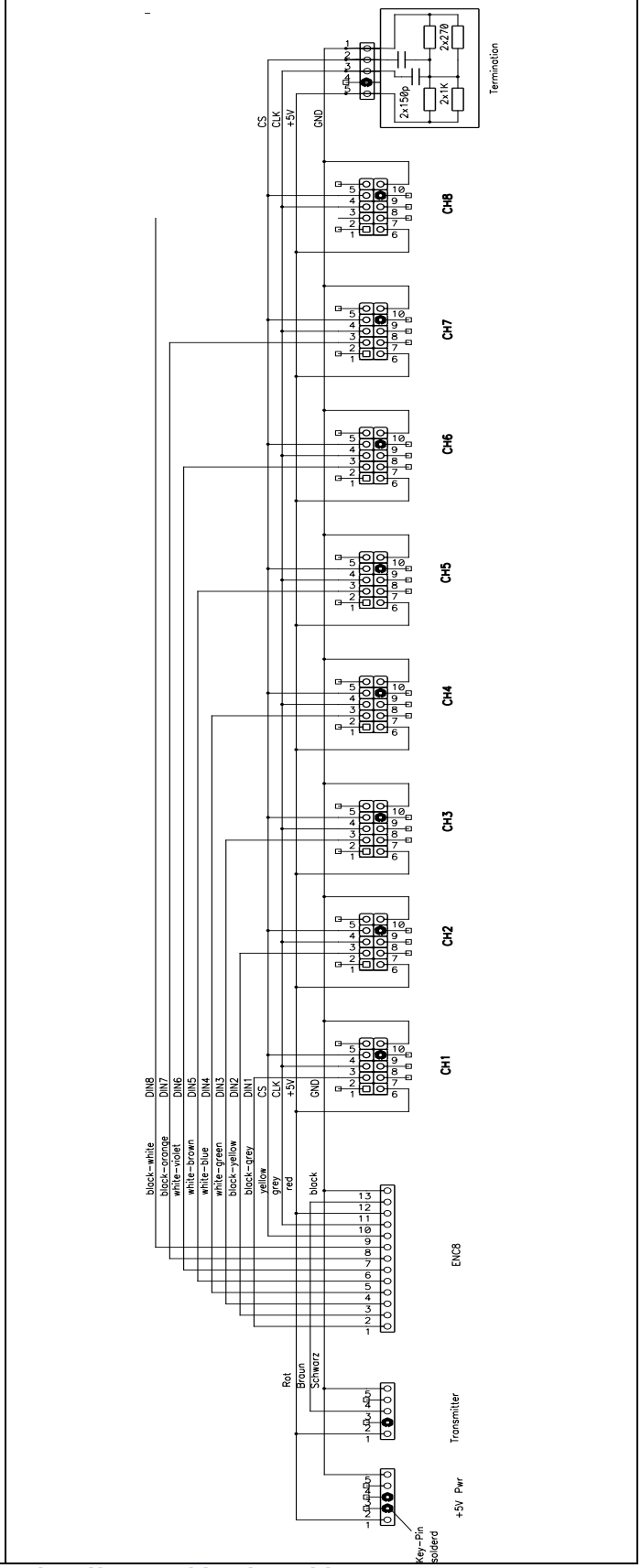
MT32 acquisition modules - dimensions



Pin connection e: 1x ENC8, 2x STG/VOLT 1x ENC8, 4x STG/VOLT/TH-K/ ICP-V2	Pin connection e.g.: 1x ENC8, 8x STG/VOLT/TH-K/ ICP-V2



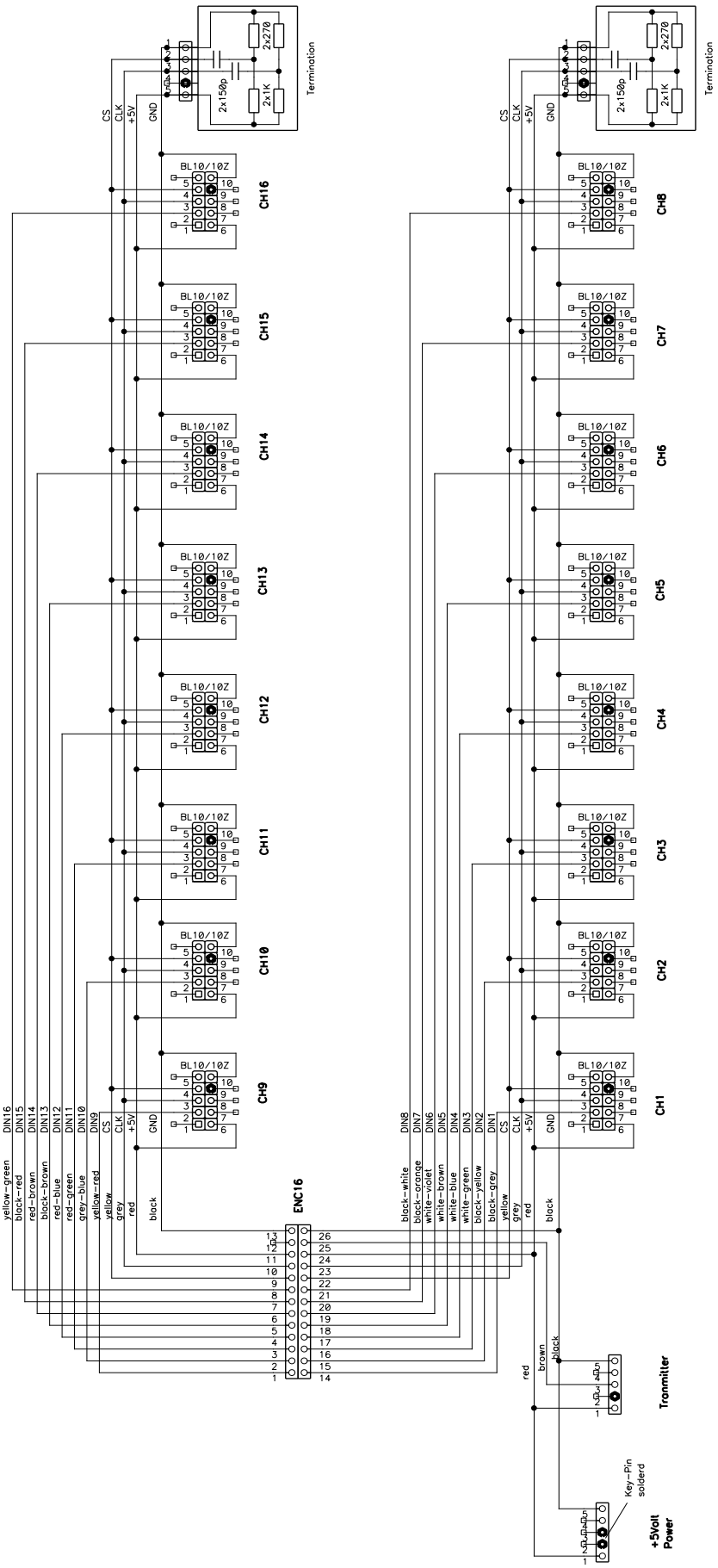
Termination not necessary at 2-CH and 4-CH loom!



Take care with your pin connection, if you solder the cable!

Don't plug any modules if Power is ON!!! First power OFF!!

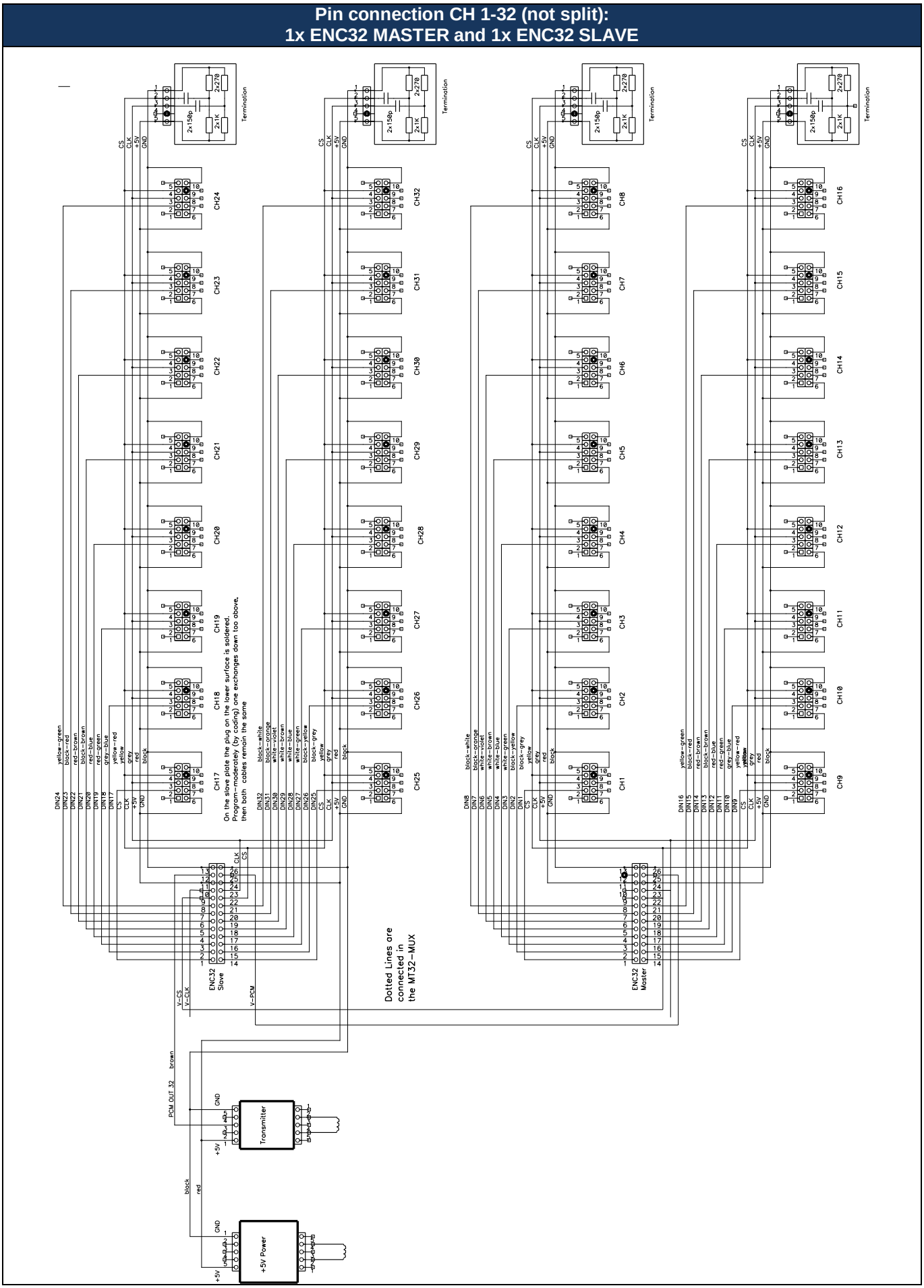
Pin connection:
1x ENC16, 16x STG/VOLT/TH-K/ ICP-V2



Take care with your pin connection, if you solder the cable!

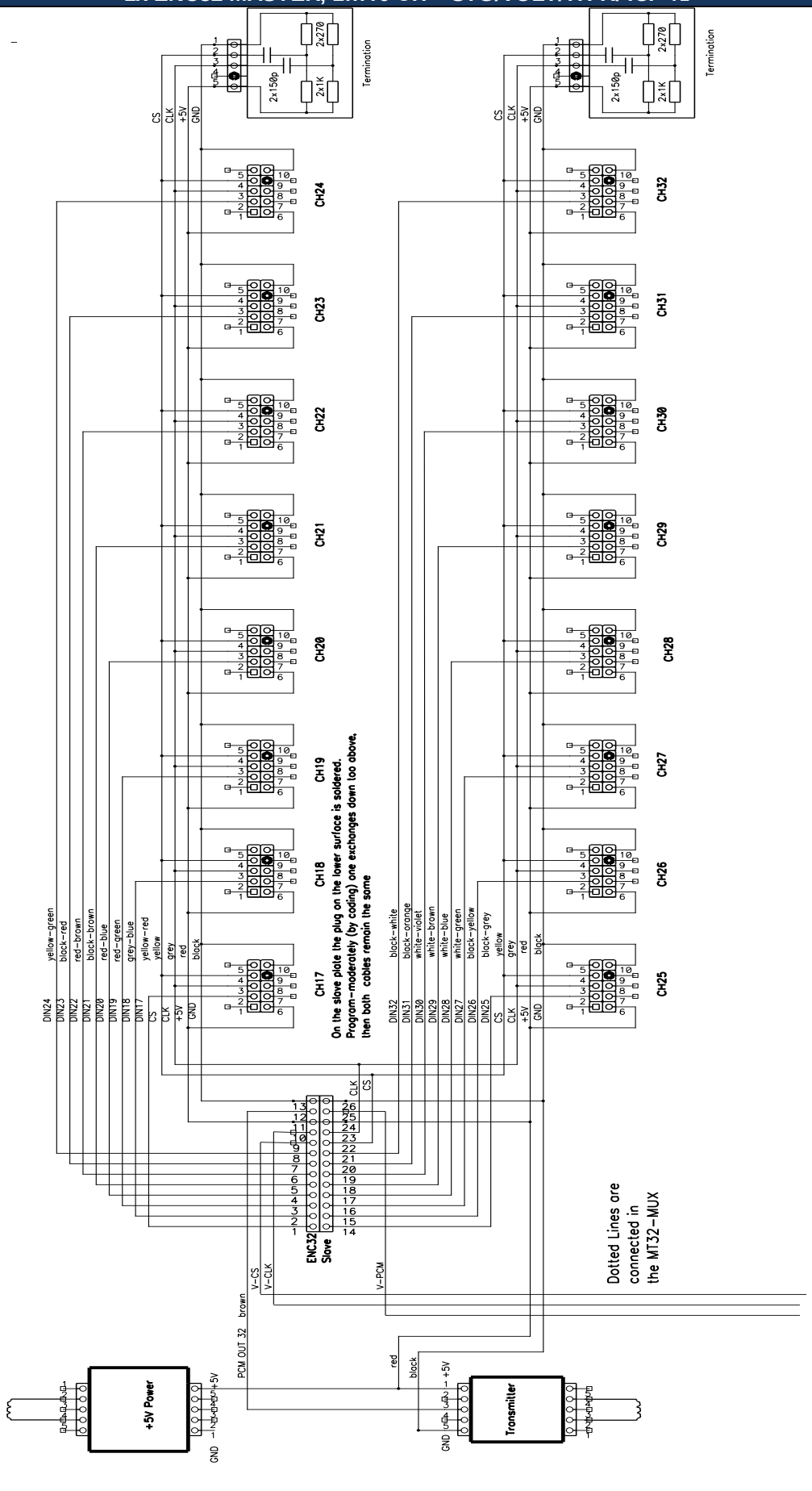
Don't plug any modules if Power is ON!!! First power OFF!!

Pin connection CH 1-32 (not split):
1x ENC32 MASTER and 1x ENC32 SLAVE


ENC32 Slave
ENC32 Master
Dotted Lines are connected in the MT32-MUX
Transmitter
+5V Power
Termination
On the slove plate the plug on the lower surface is soldered.
Program-moderately (by coding) one exchanges down too above, then both cables remain the same

Technical Data are subject to change without notice!

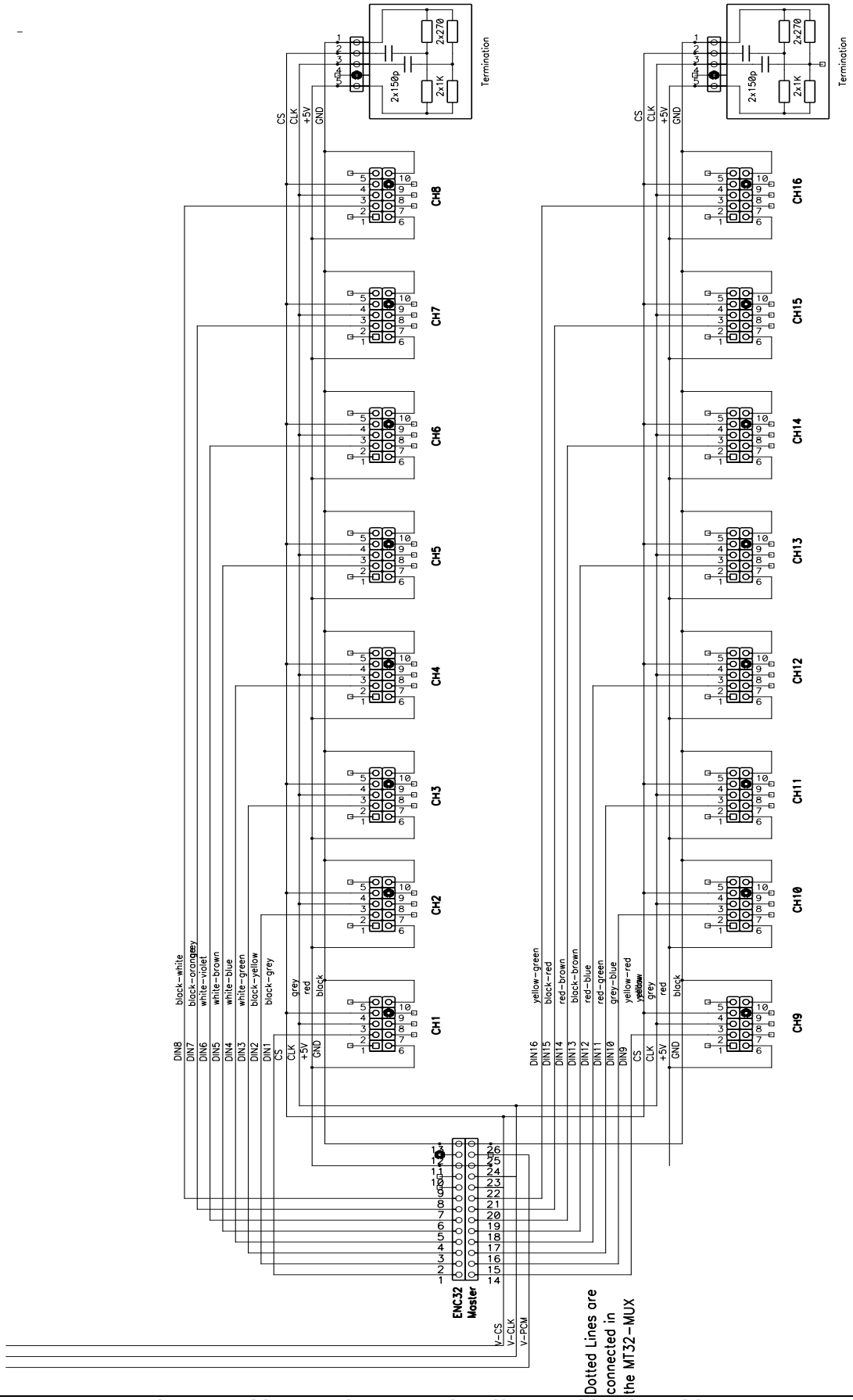
Pin connection split into CH 17-32:
1x ENC32 MASTER, 1…16 CH STG/VOLT/TH-K/ ICP-V2



Take care with your pin connection, if you solder the cable!

Don't plug any modules if Power is ON!!! First power OFF!!

Pin connection split into CH 1-16:
1x ENC32 SLAVE, 17…32 CH STG/VOLT/TH-K/ ICP-V2



Take care with your pin connection, if you solder the cable!

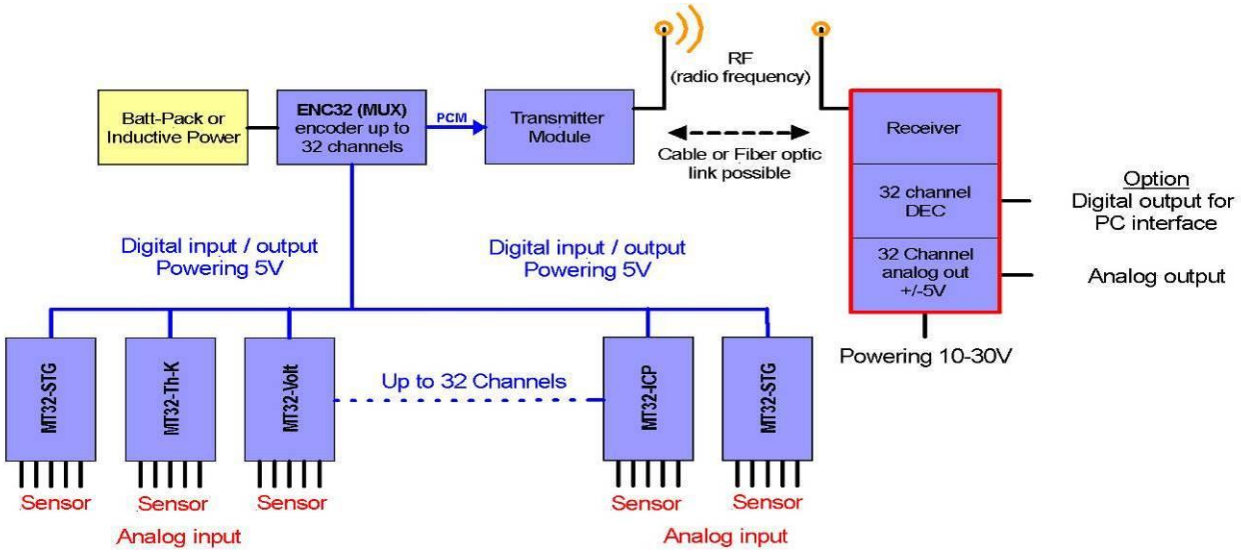
Don't plug any modules if Power is ON!!! First power OFF!!

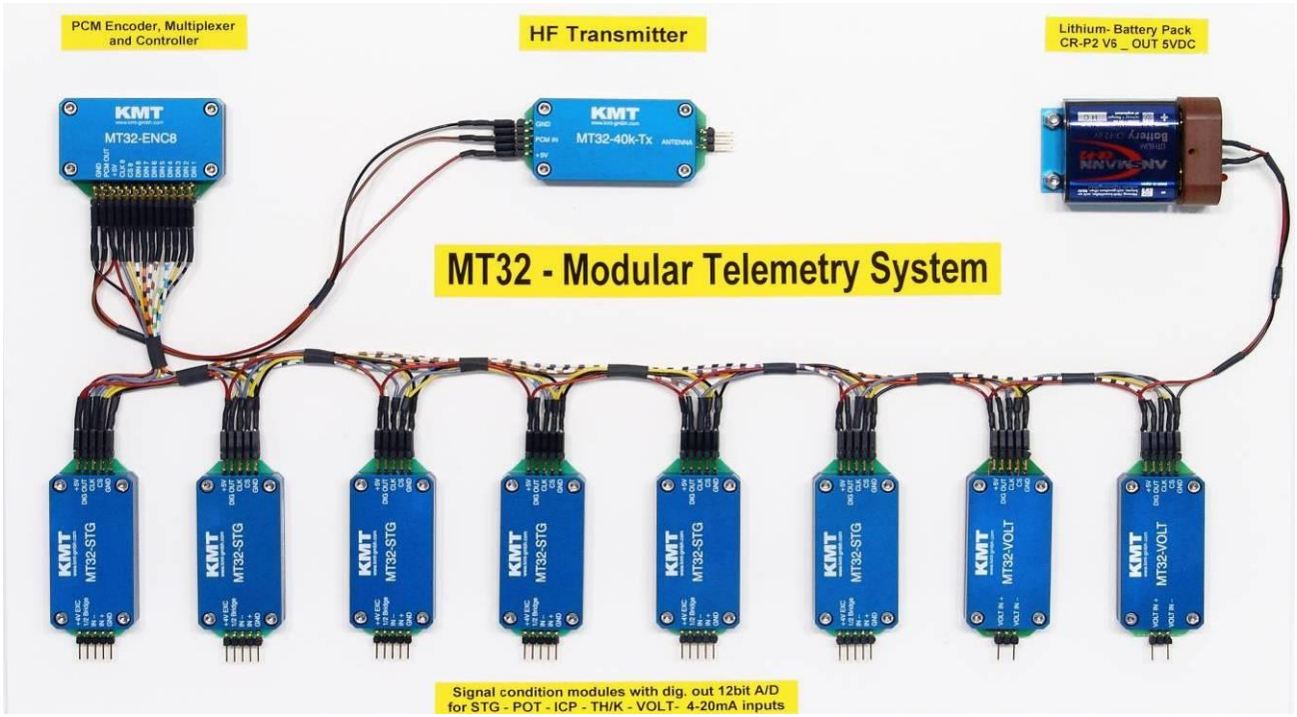
Short description:

The MT32 Mini-Telemetry is a very small and flexible telemetry system for rotating, mobile and stationary applications. Each sensor module is equipped with signal conditioning, anti-aliasing filters, analog-to-digital converters and a digital output. All these up to 32 modules will controlled by an encoder (multiplexer with PCM output) module. By this concept it's possible to install the acquisition modules close to the sensor to have short connections for the analog sensor lines. This avoids an undesired coupling of disturbances resulting in noisy signals. The interference insensitive digital outputs then can lead over wider distances of up to 5m to the encoder module. The encoder output is a PCM bit stream signal which can be modulated for emission by a transmitter module.

To support a wide range of applications there are different HF- transmitter types available. This includes different distances (short and long), transmission rates (40, 320, 640, 1280 or 2560kbit/s). Please send us an exactly description of your application with a simple block diagram. This ensures to provide you a proposal for an optimal solution.

The supply voltage for the transmitting part is 5V DC. It can be generated by batteries, inductive or mains power supplies (depends on application). Optional it's also possible to combine all signal acquisition modules, encoder, transmitter and batteries in a small housing as a compact ready-to-use telemetry system (CT8-16). For strain gage applications the offset can compensated by potentiometer on the acquisition module or optional by auto-zeroing via a micro switch on the encoder simultaneously for all modules. The calibration settings are not affected during power off. The receiver station output the signals in a ± 5V full scale range via BNC connectors. It will powered with 10-30V DC or optional by an external mains power supply with 110-230V AC.




PCM Encoder, Multiplexer
and Controller
HF Transmitter
Lithium- Battery Pack
CR-P2 V6 _ OUT 5VDC
MT32 - Modular Telemetry System
Signal condition modules with dig. out 12bit A/D
for STG - POT - ICP - TH/K - VOLT- 4-20mA inputs

MT32 acquisition modules

52 x 27 x 11 mm
Weight 20 grams

MT32-STG V1
For strain gages
Full and half (≥350Ω)
(quarter bridge only with external completions resistor!)
Fixed excitation 4V DC
Offset calibration via potentiometer or optional auto-zeroing
Gain 200 or 1000
Anti aliasing filter
Resolution 12bit = 72dB dynamic range
Accuracy <0.25%
Consumption of current: 20mA

52 x 27 x 11 mm
Weight 20 grams

MT32-POT
For all potentiometer values
350Ohm to 10kOhm
Excitation:4 VDC (fixed)
Resolution 12bit = 72dB dynamic range
Anti aliasing filter
Accuracy <0.25%
Consumption of current:20mA

52 x 27 x 11 mm
Weight 20 grams

MT32-STG V2
For strain gages
Full and half (≥350Ω)
(quarter bridge only with external completions resistor!)
Fixed excitation 4V DC
Offset calibration via potentiometer or optional auto-zeroing
Gain: **250-500-1000-2000** or
1000-2000-4000-8000
Specify at order
Anti aliasing filter
Resolution 12bit = 72dB dynamic range
Accuracy <0.25%
Consumption of current: 26mA

52 x 27 x 11 mm
Weight 20 grams

MT32-PT100
For thermo resistors
Range -100 …+500 °C
Resolution 12bit = 72dB dynamic range
Accuracy <0.25%
Consumption of current:5mA

52 x 27 x 11 mm
Weight 20 grams

MT32-ICP
For ICP® sensor inputs
(Max. input range at gain 2x = ±2.5V)
Current exc. **4mA** (optional 1mA)
Signal gain x 2, 4, 8, 16 and 32
(optional x 1, 2, 4, 8 and 16)
Signal bandwidth 3 Hz up to 12000Hz*
(*dependent of the max. cut of frequency)
Resolution 12bit = 72dB dynamic range
Accuracy <0.25%
Consumption of current: 50mA

52 x 27 x 11 mm
Weight 20 grams

MT32-VOLT
For high level inputs ±5V or ±10V
Resolution 12bit = 72dB dynamic
Accuracy <0.25%
Consumption of current: 10mA

Optional Volt ISO available with galvanic isolated inputs

52 x 27 x 11 mm
Weight 20 grams

MT32-TH K-ISO
For thermo couples type K
(with galvanic isolation!)
Range -50 to 1000 °C
(other range on request)
Resolution 12bit = 72dB dynamic range
Bandwidth 0-10Hz
Accuracy <1%
Consumption of current:12mA

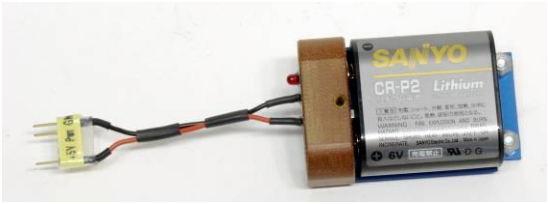
MT32 power supply rotating part

52 x 27 x 11 mm
Weight 20 grams

DC/DC PWR-5V-1000
Input **7…30V DC**
Output 5V DC
Max. current 1000mA

Lithium battery from SAFT:
2xLSH14, 3.6V each, 5800mAh
2x 3.6V = 7.2V with 5800mAh
or
2x LSH20, 3.6V each, 13000mAh
2x 3.6V = 7.2V with 13000mAh

This is only a recommendation!
The use of lithium batteries follow at one's own risk!!



58 x 35 x 21 mm
Weight about 60gram

MT32-BATT-PACK
Input 6V via Lithium battery
CR-P2 6V 1500mA/h
Output 5V DC
Low BATT LED display
Max. current 300mA

This is only a recommendation!
The use of lithium batteries follow at one's own risk!!

IND-Pwr-AC/DC module

52 x 27 x 11 mm
Weight 20 grams

MT32- inductive AC/DC PWR 5V
Input AC 20-30kHz
Output 5V DC
Max. current 500mA

For inductive IND-PWR AC/DC module is an additional power supply necessary!

MT32 encoder and decoder

52 x 27 x 11 mm
Weight 20 grams

MT32-ENC8
PCM encoder module for linking the data of up to 8 SC modules to one PCM bit stream for transmission
Consumption of current: 20mA

65 x 105 x 230 mm - Weight 1000 grams

MT32-DEC8
Receiver for up to 2, 4 or 8 channels
±5V output range on female BNC
Total system accuracy ±0,25% without sensors
Powering 10–30V DC or optional 110-230V AC (50Hz-60Hz)
with AC/DC adaptor

52 x 27 x 11 mm
Weight 20 grams

MT32-ENC16
PCM encoder module for linking the data of up to 16 SC modules to one PCM bit stream for transmission.
Consumption of current: 20mA

MT32-DEC16
65 x 105 x 230 mm
Weight 1000 grams

Option :BNC16

MT32-DEC16
Receiver for 16 channels
±5V output range
Output 37pol. Sub D
Total system accuracy ±0,25% without sensors
Powering 10–30V DC or optional 110-230V AC
with AC/DC adaptor

Option: BNC16, adaptor Box
37 Sub-D to 16 x BNC Outputs

MT32 transmitter module

52 x 27 x 11 mm
Weight 20 grams

MT32-IND-Tx-2560k
Inductive data transmission transmitter
Total sampling rate 160 kS/s
Transmission rate 2560kbit/s
Distance up to 0.1m (>100mm)
Consumption of current: 15mA

52 x 27 x 11 mm
Weight 25 grams

MT32-IND-Tx-45MHz-2560k
Inductive data transmission transmitter with 45MHz carrier
(for noise environmental areas!)
Total sampling rate 160 kS/s
Transmission rate 2560kbit/s
Distance up to 0.1m (>100mm)
Consumption of current: 70mA

52 x 27 x 11 mm
Weight 23 grams

MT32-40k (320-640-1280k available)
Range 10m on rotating applications.
Total scanning rate 2,5 kS/s
Transmission rate 40kbit/s
Transmission power 10mW
Consumption of current: 40mA

Cut off frequency from anti-aliasing filter (-3dB), scanning rate (red), latency time (brown) analog IN/OUT

Bit rate	2 Channels	4 Channels	8 Channels	16 Channels	32 Channels
2560 kbit/s	24000Hz (91428 Hz) 0.079ms	12000 Hz (49231 Hz) 0.149ms	6000 Hz (25600 Hz) 0.29ms	3000 Hz (13061Hz) 0.56ms	1500 Hz (6598Hz) 1.108ms
1280 kbit/s	12000 Hz (45714 Hz) 0.154ms	6000 Hz (24615 Hz) 0.295ms	3000 Hz (12800 Hz) 0.57ms	1500 Hz (6530 Hz) 1.11ms	750 Hz (3298 Hz) 2.23ms
640 kbit/s	6000 Hz (22857Hz) 0.305ms	3000 Hz (12308 Hz) 0.578ms	1500 Hz (6400 Hz) 1.12ms	750 Hz (3265 Hz) 2.24ms	375 Hz (1649 Hz) 4.6ms
320 kbit/s	3000 Hz (11428 Hz) 0.597ms	1500 Hz (6154 Hz) 1.14ms	750 Hz (3200 Hz) 2.26 ms	375 Hz (1632 Hz) 4.64ms	190 Hz (824 Hz) 9.1ms
40 kbit/s	375 Hz (1428 Hz) 4.9ms	190 Hz (770 Hz) 9.4ms	95 Hz (400 Hz) 17.8ms	47 Hz (204 Hz) 35,0ms	23 Hz (103 Hz) 69.3ms

Scanning rate, signal bandwidth and frame length depending on bit rate and number of channels

Frame example with 8 channels as following: 8Ch x12 bit = 96 bit + 4 bit sync. = 100 bit

1x data frame

1 Ch.	2 Ch.	3 Ch.	4 Ch.	5 Ch.	6 Ch.	7 Ch.	8 Ch.	Sync. bit	
12 bit	12 bit	12 bit	12 bit	12 bit	12 bit	12 bit	12 bit	4 bit	= bit rate100 bit

32 Ch. x 12 bit = 384 bit + 4 bit sync. = 388 bit
16 Ch. x 12 bit = 192 bit + 4 bit sync. = 196 bit
8 Ch. x 12 bit = 96 bit + 4 bit sync. = 100 bit
4 Ch. x 12 bit = 48 bit + 4 bit sync. = 52 bit
2 Ch. x 12 bit = 24 bit + 4 bit sync. = 28 bit

Scanning you can calculate e.g.: 40kbit transfer rate, 8 Ch. = 40000 : 100bit = 400Hz per Ch.

Environmental:

Rotating Part (blue modules):

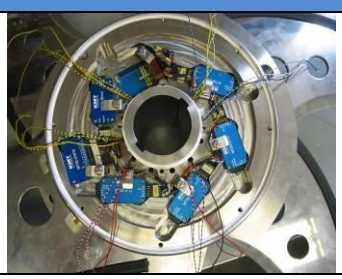
- Operating Temperature ..... -20 – +80°C
- Storage Temperature ..... -30 – +90°C
- Humidity (non-condensing) ..... 20 – 80%
- Vibration ..... 5g Mil standard 810C, curve C
- Shock & static acceleration (in any direction) 3000g

Down load formula (Excel format) to calculate the static acceleration (RPM/diameter):
http://www.kmt-gmbh.com/en/telemetrie/Calculation of radial acceleration of shaft.xls

Receiving Part:

- Operating Temperature ..... -10 – +70°C
- Storage Temperature ..... -20 – +80°C
- Humidity (non-condensing) ..... 20 – 80%
- Vibration ..... 5g Mil standard 810C, curve C
- Shock (in any direction) 100g

Application

Streetcar wheel	Railway wheel	Railway wheel	Railway wheel
Belt disk of car	**Drive shaft of ship engines**	**Shaft of wind power plant**	**Test rigs**
Drive shaft of wheel loader	**Force measurements**	**24kHz data transmission TTL**	**Special solution for force test at milling machine**
			

Item	Qty.	Type	Description
			Order Samples
			MT32-2CH-40k-DIV, 2xSTG, BATT, BW 2x0-375Hz
	2	MT32-STG-V2 NEW	Signal conditioning module for strain gages - gain 250-500-1000-2000
	1	MT32-ENC8	Encoder for up to 8 acquisition module
	1	MT32-40k-10-DIV	RF telemetry transmitter and diversity receiver with 40kbit (2,5kS/s)
	1	BATT-PACK	Battery pack
	1	BATT-SET	Battery set
	1	MT32-DEC2	Decoder for 2 channels, Output 2 x BNC
	1	AC/DC	AC/DC power supply for DEC2 (Optional)
			MT32-2CH-IND-TX-RX, 2xSTG, BATT, BW 2x0-24000Hz
	2	MT32-STG-V2 NEW	Signal conditioning module for strain gages - gain 250-500-1000-2000
	1	MT32-ENC8	Encoder for up to 8 acquisition module
	1	MT32-IND-TX-RX-45MHz	Inductive telemetry transmitter and receiver, 45MHz carrier, 2560kbit
	1	BATT-PACK	Battery pack
	1	BATT-SET	Battery set
	1	MT32-DEC2	Decoder for 2 channels, Output 2 x BNC
	1	AC/DC	AC/DC power supply for DEC2 (Optional)
			MT32-2CH-IND-TX-RX, 2xSTG, IND-PWR, BW 2x0-24000Hz
	2	MT32-STG-V2 NEW	Signal conditioning module for strain gages - gain 250-500-1000-2000
	1	MT32-ENC8	Encoder for up to 8 acquisition module
	1	MT32-IND-TX-RX-45MHz	Inductive telemetry transmitter and receiver, 45MHz carrier, 2560kbit
	1	IND-PWR-L	Inductive power supply
	1	MT32-DEC2	Decoder for 2 channels, Output 2 x BNC
	1	AC/DC	AC/DC power supply for DEC2 (Optional)
	1	AC/DC-24V-2.5A	AC/DC power supply 65 WATT for IND-Power Supply L/XL
			MT32-4CH-40k-DIV, 4xSTG, BATT, BW 4x0-190Hz
	4	MT32-STG-V2 NEW	Signal conditioning module for strain gages - gain 250-500-1000-2000
	1	MT32-ENC8	Encoder for up to 8 acquisition module
	1	MT32-40k-10-DIV	RF telemetry transmitter and diversity receiver with 40kbit (2,5kS/s)
	1	BATT-PACK	Battery pack
	1	BATT-SET	Battery set
	1	MT32-DEC4	Decoder for 4 channels, Output 4 x BNC
	1	AC/DC	AC/DC power supply for DEC4 (Optional)
			MT32-4CH-IND-TX-RX, 4xSTG, BATT, BW 4x0-12000Hz
	4	MT32-STG-V2 NEW	Signal conditioning module for strain gages - gain 250-500-1000-2000
	1	MT32-ENC8	Encoder for up to 8 acquisition module
	1	MT32-IND-TX-RX-45MHz	Inductive telemetry transmitter and receiver, 45MHz carrier, 2560kbit
	1	BATT-PACK	Battery pack
	1	BATT-SET	Battery set
	1	MT32-DEC4	Decoder for 4 channels, Output 4 x BNC
	1	AC/DC	AC/DC power supply for DEC4 (Optional)
			MT32-8CH-320k-DIV, 8xSTG, BATT, BW 8x0-750Hz
	8	MT32-STG-V2 NEW	Signal conditioning module for strain gages - gain 250-500-1000-2000
	1	MT32-ENC8	Encoder for up to 8 acquisition module
	1	MT32-320k-10-DIV	RF telemetry transmitter and diversity receiver with 320kbit (20kS/s)
	1	BATT-PACK	Battery pack
	1	BATT-SET	Battery set
	1	MT32-DEC8	Decoder for 8 channels, Output 8 x BNC
	1	AC/DC	AC/DC power supply for DEC8 (Optional)

Item	Qty.	Type	Description
8b			Order Samples
			MT32-8CH-IND-TX-RX, 8xSTG, BATT, BW 8x0-6000Hz
	8	MT32-STG-V2 NEW	Signal conditioning module for strain gages - gain 250-500-1000-2000
	1	MT32-ENC8	Encoder for up to 8 acquisition module
	1	MT32-IND-TX-RX-45MHz	Inductive telemetry transmitter and receiver, 45MHz carrier, 2560kbit
	1	BATT-PACK	Battery pack
	1	BATT-SET	Battery set
	1	MT32-DEC8	Decoder for 8 channels, Output 8 x BNC
	1	AC/DC	AC/DC power supply for DEC8 (Optional)
			MT32-8CH-IND-TX-RX-45MHz, 8xSTG, BATT, BW 8x0-6000Hz
	8	MT32-STG-V2 NEW	Signal conditioning module for strain gages - gain 250-500-1000-2000
	1	MT32-ENC8	Encoder for up to 8 acquisition module
	1	MT32-IND-TX-RX-45MHz	Inductive telemetry transmitter and receiver, 45MHz carrier, 2560kbit
	1	BATT-PACK	Battery pack
	1	BATT-SET	Battery set
	1	MT32-DEC8	Decoder for 8 channels, Output 8 x BNC
	1	AC/DC	AC/DC power supply for DEC8 (Optional)
			MT32-8CH-IND-TX-RX, 8xSTG, BATT, BW 8x0-6000Hz, DIG-OUT
			only Digital OUT, with LAN IP interface and MLAB software
	8	MT32-STG-V2 NEW	Signal conditioning module for strain gages - gain 250-500-1000-2000
	1	MT32-ENC8	Encoder for up to 8 acquisition module
	1	MT32-IND-TX-RX-45MHz	Inductive telemetry transmitter and receiver, 45MHz carrier, 2560kbit
	1	BATT-PACK	Battery pack
	1	BATT-SET	Battery set
	1	MT32-DEC-DIG-IP-LAN	Digital decoder with PCM-LAN-IP interface
	1	REMUS-Lab	32bit data acquisition and on-line processing software for WinXP/WIN7
	1	AC/DC	AC/DC power supply for DEC-DIG (Optional)
			MT32-8CH-IND-TX-RX 45MHz, 8xSTG, IND-PWR, BW 8x0-6000Hz
	8	MT32-STG-V2 NEW	Signal conditioning module for strain gages - gain 250-500-1000-2000
	1	MT32-ENC8	Encoder for up to 8 acquisition module
	1	MT32-IND-TX-RX-45MHz	Inductive telemetry transmitter and receiver, 45MHz carrier, 2560kbit
	1	IND-PWR-L	Inductive power supply
	1	MT32-DEC8	Decoder for 8 channels, Output 8 x BNC
	1	AC/DC	AC/DC power supply for DEC8
	1	AC/DC-24V-2.5A	AC/DC power supply 65 WATT for IND-Power Supply L/XL
			MT32-8CH-IND-TX-RX 6xSTG, 2 x ICP, BATT, BW 8x0-6000Hz
	6	MT32-STG-V2 NEW	Signal conditioning module for strain gages - gain 250-500-1000-2000
	2	MT32-ICP	Signal conditioning module for ICP sensors with digital data acquisition
	1	MT32-ENC8	Encoder for up to 8 acquisition module
	1	MT32-IND-TX-RX-45MHz	Inductive telemetry transmitter and receiver, 45MHz carrier, 2560kbit
	1	BATT-PACK	Battery pack
	1	BATT-SET	Battery set
	1	MT32-DEC8	Decoder for 8 channels, Output 8 x BNC
	1	AC/DC	AC/DC power supply
			MT32-16CH-IND-TX-RX 45MHz, 16xSTG, BATT, BW 16x0-3000Hz
	16	MT32-STG-V2 NEW	Signal conditioning module for strain gages - gain 250-500-1000-2000
	1	MT32-ENC16	Encoder for up to 16 acquisition module
	1	MT32-IND-TX-RX-45MHz	Inductive telemetry transmitter and receiver, 45MHz carrier, 2560kbit
	1	DC/DC PWR-5V-1000	Power module for blue modules, IN 7-30V OUT 1000mA 5VDC
	1	MT32-DEC16	Decoder for 16 channels, Output via 37pol. Sub-D Connector
	1	BNC16 BOX	Adapter BOX for DEC16 multiple 37pole Sub-D to 16 single BNC connectors
	1	AC/DC	AC/DC power supply

Item	Qty.	Type	Description
			Order Samples
			MT32-16CH-IND-TX-RX 16xSTG, BATT, BW 16x0-3000Hz
			only Digital OUT, with LAN IP interface and REMUS-LAB software
	16	**MT32-STG-V2 NEW**	**Signal conditioning module for strain gages - gain 250-500-1000-2000**
	1	**MT32-ENC16**	**Encoder for up to 16 acquisition module**
	1	**MT32-IND-TX-RX-45MHz**	**Inductive telemetry transmitter and receiver, 45MHz carrier, 2560kbit**
	1	**DC/DC PWR-5V-1000**	**Power module for blue modules, IN 7-30V OUT 1000mA 5VDC**
	1	**MT32-DEC-DIG-IP-LAN**	**Digital decoder with PCM-LAN-IP interface**
	1	**REMUS-Lab**	**32bit data acquisition and on-line processing software for WinXP/WIN7**
	1	**AC/DC**	**AC/DC power supply**
			MT32-16CH-IND-TX-RX-45MHz, 16xSTG, IND-PWR, BW 16x0-3000Hz
	16	**MT32-STG-V2 NEW**	**Signal conditioning module for strain gages - gain 250-500-1000-2000**
	1	**MT32-ENC16**	**Encoder for up to 16 acquisition module**
	1	**MT32-IND-TX-RX-45MHz**	**Inductive telemetry transmitter and receiver, 45MHz carrier, 2560kbit**
	1	**IND-PWR-XL**	**Inductive power supply**
	1	**MT32-DEC16**	**Decoder for 16 channels, Output via 37pol. Sub-D Connector**
	1	**BNC16 BOX**	**Adapter BOX for DEC16 multiple 37pole Sub-D to 16 single BNC connectors**
	2	**AC/DC**	**AC/DC power supply (1x for DEC16, 1x for IND-PWR)**
			MT32-16CH-1280k-DIV, 16xSTG, BATT, BW 16x0-1500Hz
	16	**MT32-STG-V2 NEW**	**Signal conditioning module for strain gages - gain 250-500-1000-2000**
	1	**MT32-ENC16**	**Encoder for up to 16 acquisition module**
	1	**MT32-1280k-10-DIV**	**RF telemetry transmitter and diversity receiver with 1280kbit (80kS/s)**
	1	**DC/DC PWR-5V-1000**	**Power module for blue modules, IN 7-30V OUT 1000mA 5VDC**
	1	**MT32-DEC16**	**Decoder for 16 channels, Output via 37pol. Sub-D Connector**
	1	**BNC16 BOX**	**Adapter BOX for DEC16 multiple 37pole Sub-D to 16 single BNC connectors**
	1	**AC/DC**	**AC/DC power supply for DEC16 (Optional)**
			MT32-32CH-1280k-DIV, 32xSTG, BATT, BW 32x0-750Hz
	32	**MT32-STG-V2 NEW**	**Signal conditioning module for strain gages - gain 250-500-1000-2000**
	1	**MT32-ENC32**	**Encoder for up to 32 acquisition module**
	1	**MT32-1280k-10-DIV**	**RF telemetry transmitter and diversity receiver with 1280kbit (80kS/s)**
	1	**DC/DC PWR-5V-1000**	**Power module for blue modules, IN 7-30V OUT 1000mA 5VDC**
	1	**MT32-DEC32**	**Decoder for 32 channels, Output via 37pol. Sub-D Connector**
	1	**BNC32 BOX**	**Adapter BOX for DEC32 multiple 37pole SubD to 32 single BNC connectors**
	1	**AC/DC**	**AC/DC power supply for DEC32 (Optional)**
			MT32-32CH-IND-TX-RX 45MHz, 32xSTG, IND-PWR, BW 32x0-1500Hz
	32	**MT32-STG-V2 NEW**	**Signal conditioning module for strain gages - gain 250-500-1000-2000**
	1	**MT32-ENC32**	**Encoder for up to 32 acquisition module**
	1	**MT32-IND-TX-RX-45MHz**	**Inductive telemetry transmitter and receiver, 45MHz carrier, 2560kbit**
	1	**IND-PWR-XXL**	**Inductive power supply**
	1	**MT32-DEC32**	**Decoder for 32 channels, Output via 37pol. Sub-D Connector**
	1	**BNC32 BOX**	**Adapter BOX for DEC32 multiple 37pole SubD to 32 single BNC connectors**
	1	**AC/DC**	**AC/DC power supply for DEC32 (Optional)**
	1	**AC/DC-24V-5A**	**AC/DC power supply 120 WATT for IND-Power Supply XXL**

KMT - Kraus Messtechnik GmbH

Gewerbering 9, D-83624 Otterfing, Germany, ☎ 08024-48737, Fax. 08024-5532
Home Page: http://www.kmt-telemetry.com, Email: info@kmt-telemetry.com

Konformitätserklärung

Declaration of Conformity
Declaration de Conformité

Wir We Nous	**KMT - Kraus Messtechnik GmbH**
Anschrift Address Adress	**Gewerbering 9, D-83624 Otterfing, Germany**

erklären in alleiniger Verantwortung, daß das Produkt
declare under our sole responsibility, that the product
declarons sous notre seule responsibilité, que le produit

Bezeichnung Name Nom	**Messdatenübertragungssystem**
Typ,Modell,Artikel-Nr., Größe Type,Model, Article No.,Taille Type, Modèle, Mo.d'Article,Taille	**MT32 System**

mit den Anforderungen der Normen und Richtlinien
fulfills the requirements of the standard and regulations of the Directive
satisfait aux exigences des normes et directives

108/2004/EG	**Elektromagnetische Verträglichkeit EMV / EMC** DIN EN 61000-6-3 Ausgabe 2002-8 Elektromagnetische Verträglichkeit EMV Teil 6-3 Fachgrundnorm Störaussendung DIN EN 61000-6-1 Ausgabe 2002-8 Elektromagnetische Verträglichkeit EMV Teil 6-1 Fachgrundnorm Störfestigkeit

und den angezogenen Prüfberichten übereinstimmt und damit den Bestimmungen entspricht.
and the taken test reports und therefore corresponds to the regulations of the Directive
et les rapports d'essais notifiés et, ainsi, correspond aux règlement de la Directive.

Otterfing, 30.05.2006 **Martin Kraus**

KMT
Kraus Messtechnik GmbH
Gewerbering 9
D-83624 Otterfing - Germany
Tel. 08024-48737 - Fax 08024-5532
www.kmt-gmbh.com

Ort und Datum der Ausstellung Place and Date of Issua Lieu et date d'établissement	Name und Unterschrift des Befugten Name and Signature of authorized person Nom et signature de la personne autorisée

Technical Data are subject to change without notice!

KMT - Kraus Messtechnik GmbH

Gewerbering 9, D-83624 Otterfing, Germany, ☎ 08024-48737, Fax. 08024-5532
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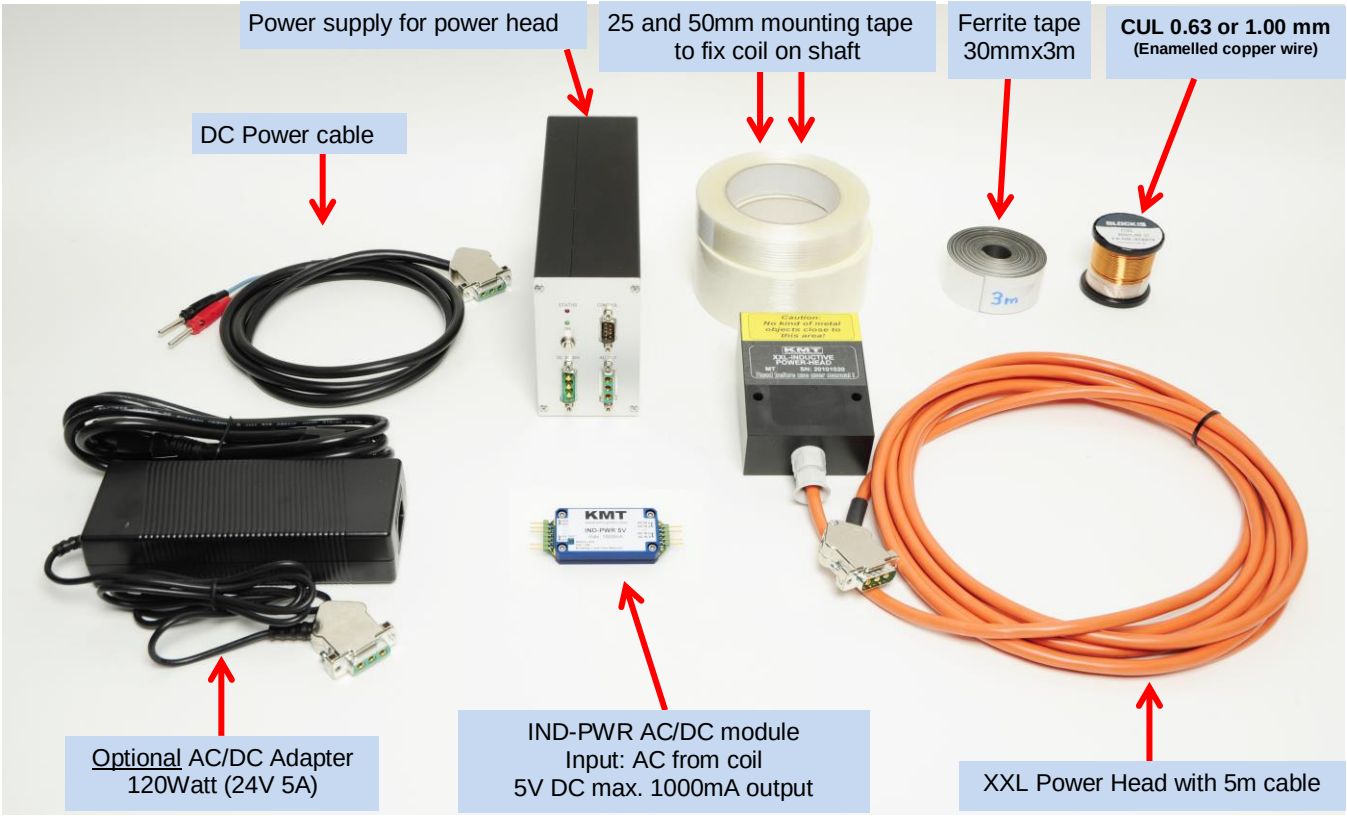
MT32
IND-PWR L/XL/XXL
NEW
User Manual

Inductive power supply set with XXL power head


Power supply for power head
25 and 50mm mounting tape to fix coil on shaft
Ferrite tape 30mmx3m
CUL 0.63 or 1.00 mm
(Enamelled copper wire)
DC Power cable
Optional AC/DC Adapter 120Watt (24V 5A)
IND-PWR AC/DC module
Input: AC from coil
5V DC max. 1000mA output
XXL Power Head with 5m cable

Picture shows standard Inductive Power Supply for diameter up to 400mm

INSTRUCTIONS FOR QUALIFIED PERSONNEL ONLY!

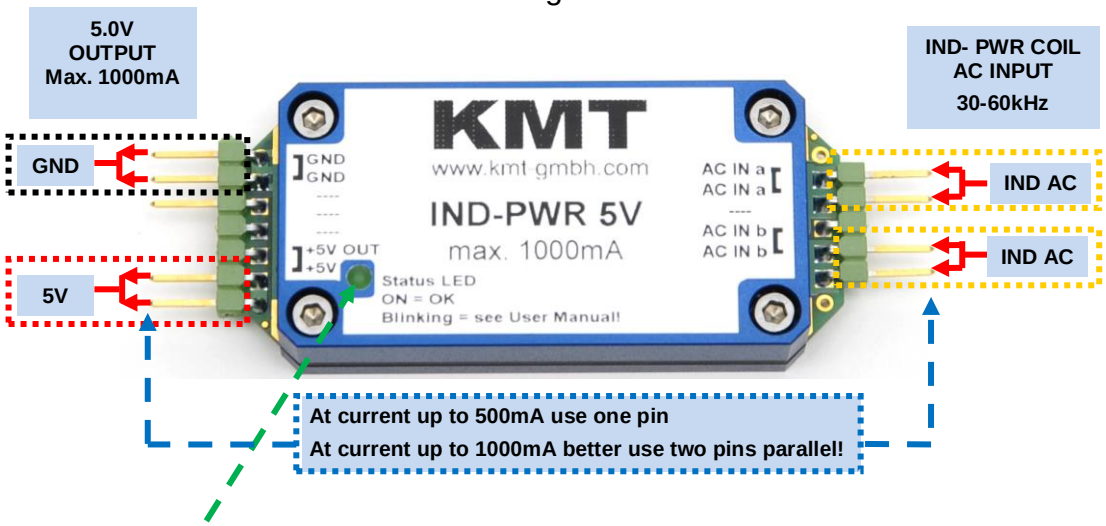
Safety notes for inductive powering

- The device should only applied by instructed personnel.
- The power head emits strong magnetic radiation at 30-60 kHz to a distance of 300 mm. Therefore persons with cardiac pacemakers should not work with this device!
- Magnetic data storage media should be kept in a distance of at least 3m from the power head to avoid data loss. The same is valid for electromagnetic sensitive parts, devices and systems.
- Do not place the power head in the switched-on state on metallic objects, because this results in eddy currents which could overload the device and strong heat up small objects. Also the probe could be destroyed!
- No metallic objects, other than the disc-type coil, should be located in the air gap of the power head. The same applies to metallic parts within a radius of up to 50 mm in all directions.
- Do not use damaged or faulty cables!
- Never touch in the area between shaft and inductive head, the rotating shaft itself or rotor electronic contacts during operation!
- This is a “Class A” system suitable for operation in a laboratory or industrial environment. The system can cause electromagnetic interferences when used in residential areas or environments. In this case the operator is responsible for establishing protective procedures.

MT32-IND-PWR 5V - AC/DC Module for inductive power
OLD PWR2_3 version until 06/2015

MT32-IND-PWR 5V
AC/DC Module for inductive power
Input: 30-60kHz, 10-50V AC
Can also power with DC 24V (Input via AC IN a and AC IN b)
Output: 5 VDC
Current: up to 1000mA
Weight: 35 gram
Vibration: 5g
Shock: 3000g

Pin assignment



Status LED

LED ON = right windings and good distance between head and coil

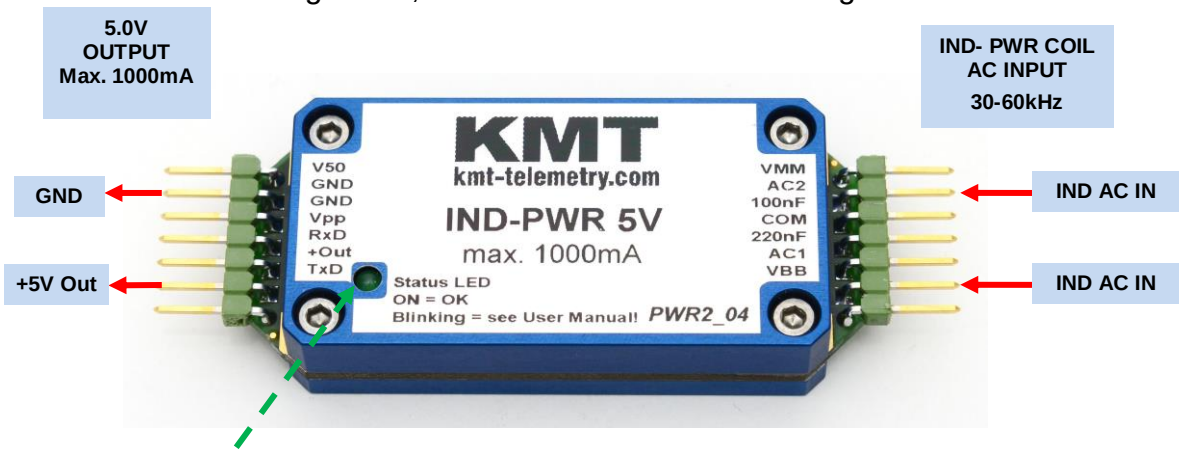
LED very low blinking = too less windings of IND-Coil or too large distance between head and coil!

LED fast blinking = too much windings (OVER POWER at IND-Coil) reduce windings or module go hot and switch OFF

MT32-IND-PWR 5V - AC/DC Module for inductive power
NEW PWR2_4 version from 07/2015

MT32-IND-PWR 5V
AC/DC Module for inductive power
Input: 30-60kHz, 10-50V AC
Can also power with DC 24V (Input via AC1 and AC 1)
Output: 5 VDC
Current: up to 1000mA
Weight: 35 gram
Vibration: 5g
Shock: 3000g

Pin assignment, more info see connection diagram!



Status LED

LED ON = optimal IND-Coil windings and good head/coil distance.

LED slow blinking = IND-Coil resonance not optimal* or too large head/coil distance.

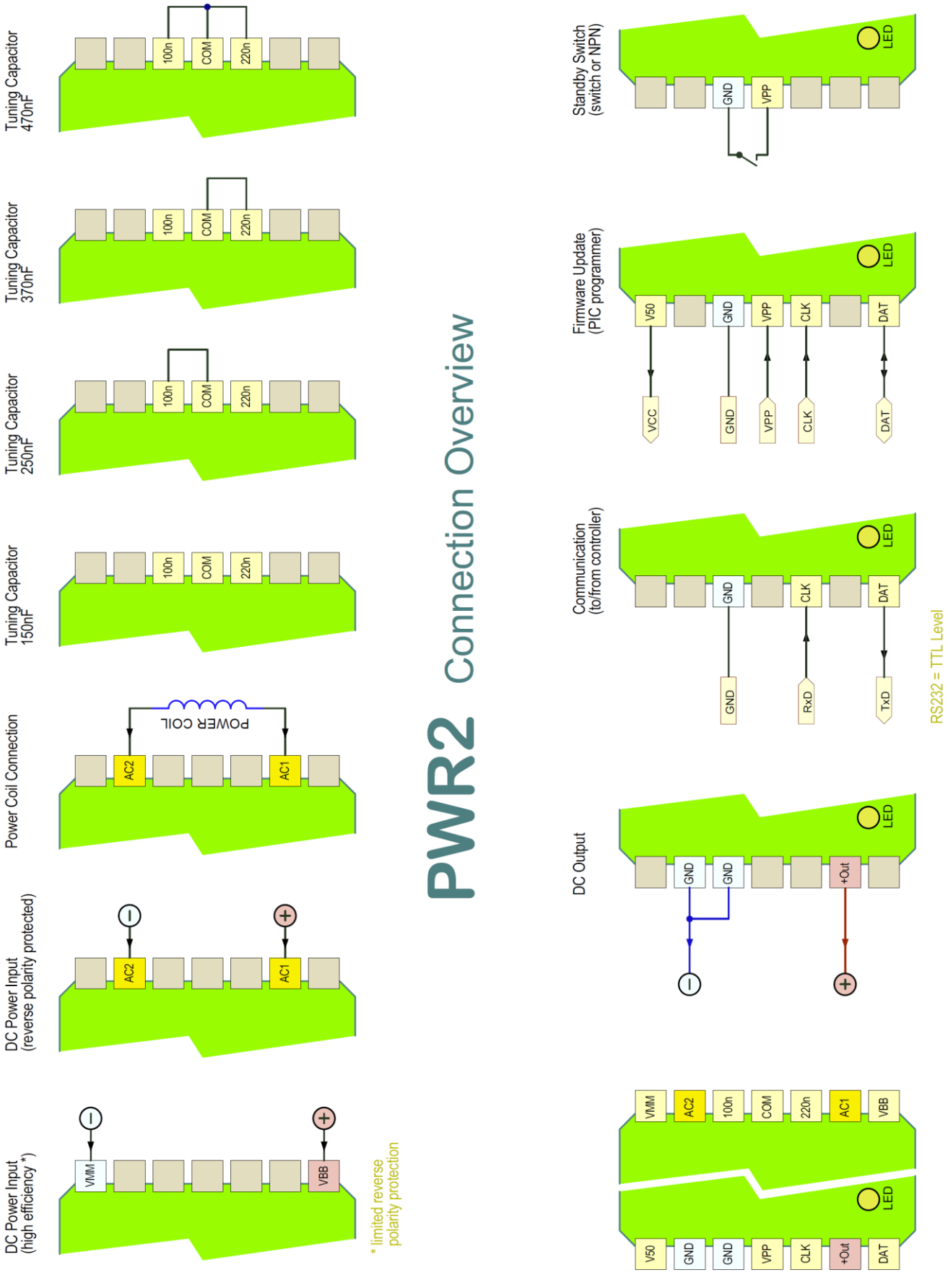
LED fast blinking = OVER POWER MESSAGE: reduce number of turns, or increase head distance.
At excessive thermal overload the module will switch off (internal thermo switch)!

LED ultra-fast blinking & no system function = IND-Coil resonance not optimal* or way too large head/coil distance.

**** resonance not optimal means: usually too less number of turns, but also too much turns decrease the energy conversion efficiency.***

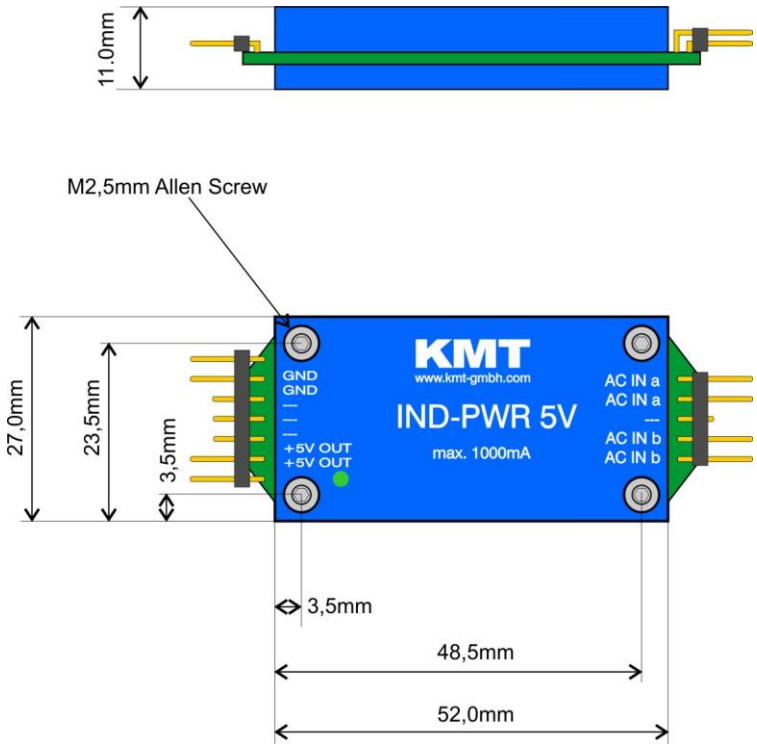
Missing turns occasionally can be compensated by increasing the tuning capacity up to 470nF (see connection diagram) (internal thermo switch!)

MT32-IND-PWR 5V - AC/DC Module for inductive power
NEW PWR2_4 version from 07/2015 - connection diagram



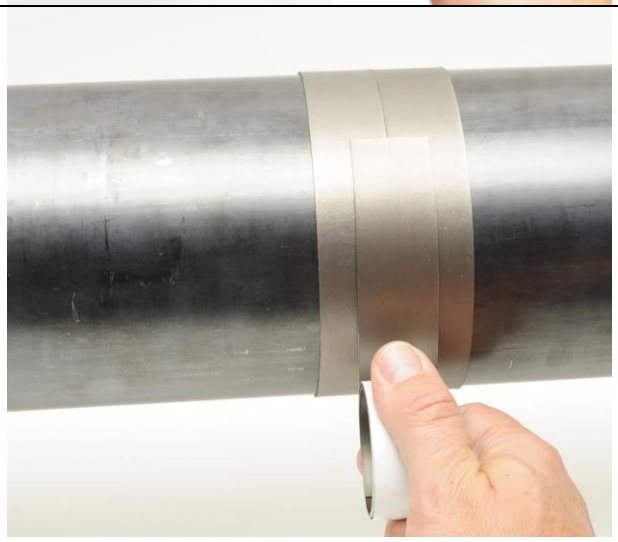
Technical Data are subject to change without notice!

MT32-IND-PWR housing - dimensions

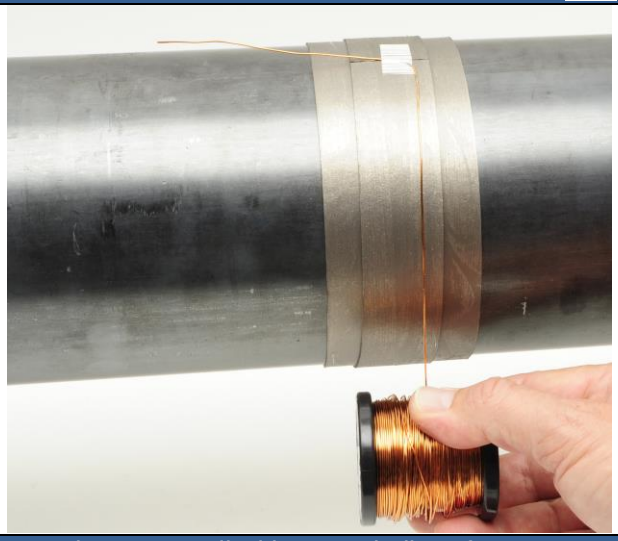


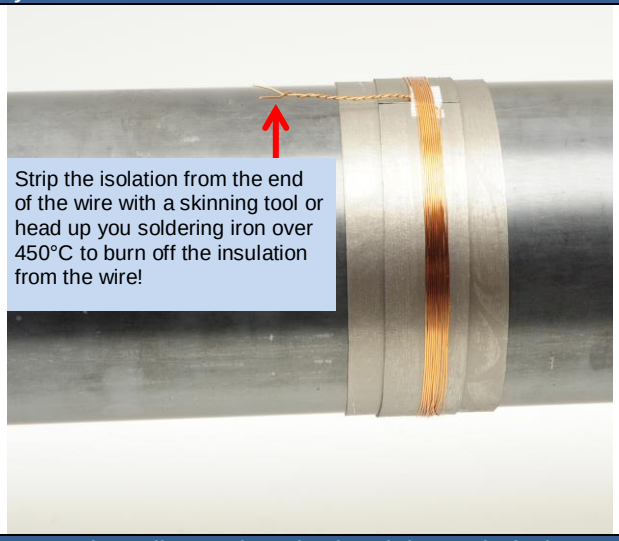
Weight about 35 grams

Inductive power supply
Installation of coil for inductive powering on shaft

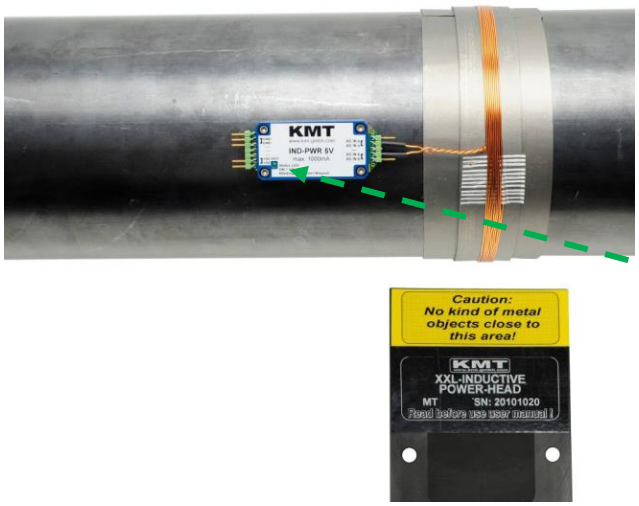
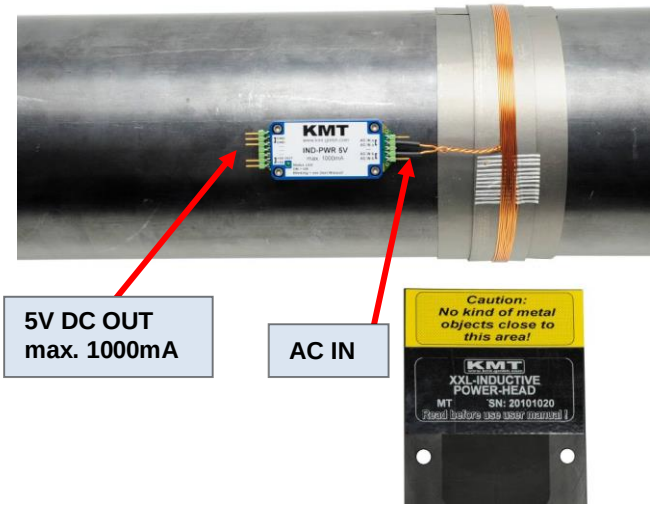


Attach for electromagnetic isolation “Ferrite Tape” 2x parallel and
1x in the middle over two layer around the shaft

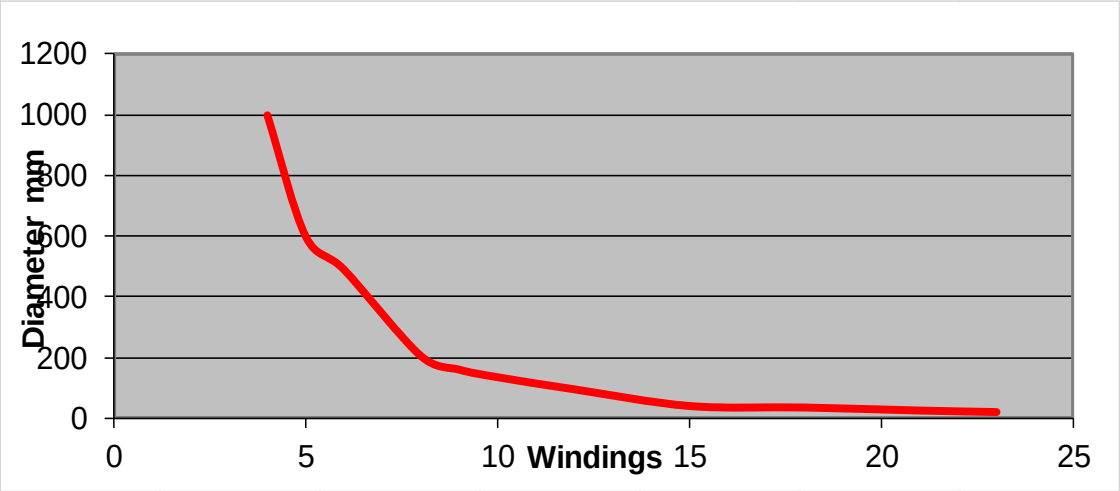



Strip the isolation from the end of the wire with a skinning tool or head up you soldering iron over 450°C to burn off the insulation from the wire!

Make power coil with 3-18 windings for 1000-20mm diameter (see diagram) and twisted the end of wire.
Use 0.63…1.00 mm (1.00mm for diameter of 200-1000mm) CUL wire (Enamelled copper wire)

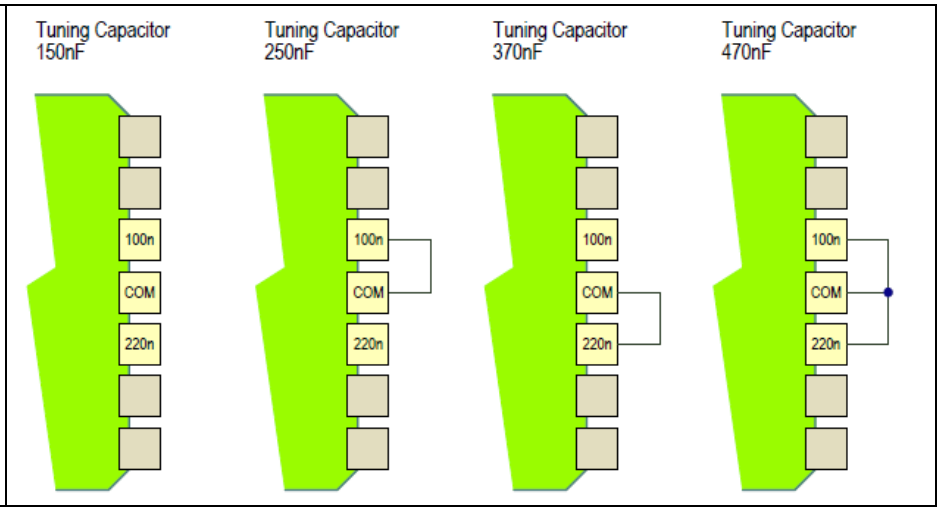
Solder the end of the pins on the AC IN of the IND-PWR module and isolate all solder points with shrink tubing Fix all with 5 lagers mounting tape!	
	Note: "The inductive load of the MT32- IND-PWR and the capacitor in the Power Head must be in resonance to get the optimal transmission. The inductive load of the shaft depends of diameters, material and number of windings! Control the output voltage and move the power-head in the max distance to the coil. The output voltage must be 5V **See also status LED** LED ON = optimal IND-Coil windings and good head/coil distance. LED slow blinking = IND-Coil resonance not optimal* or too large head/coil distance. LED fast blinking = OVER POWER MESSAGE: reduce number of turns, or increase head distance. At excessive thermal overload the module will switch off (internal thermo switch)! LED ultra-fast blinking & no system function = IND-Coil resonance not optimal* or way too large head/coil distance. * Resonance not optimal means: usually too less number of turns, but also too much turns decrease the energy conversion efficiency.
	The pins "Coil" are the AC power input from the coil. On the pins "+5V and "GND" you get a stabilized output voltage of 5V DC. The max. load current on the DC output is max. 1000mA. The IND-PWR converter will use instead battery pack! **Never use any battery together with the IndPwr!** You should mount the power head at a fixed location that it's as free as possible from strong vibration influences. The center of the coil should be in the same horizontal position as the center of the power head. The distance is optimal in the range between 5 and 10mm. (depends of shaft and current consumption)

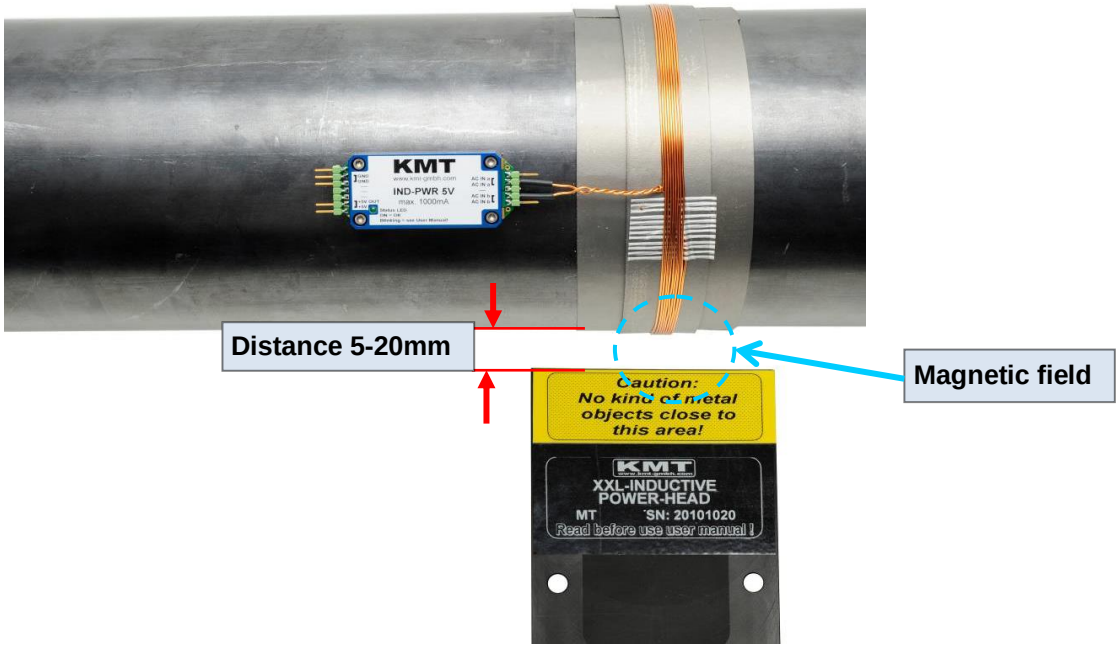
Find the correct amount of windings of inductive power coil



Missing turns occasionally can be compensated by increasing the tuning capacity from 150nF up to 470nF

Windings (+/-1)	nF	Diameter (mm)
4	250nF	1000
5	150nF	600
6	150nF	490
8	150nF	205
9	150nF	160
10	150nF	135
12	150nF	95
15	150nF	40
18	150nF	35
21	150nF	25
23	150nF	20

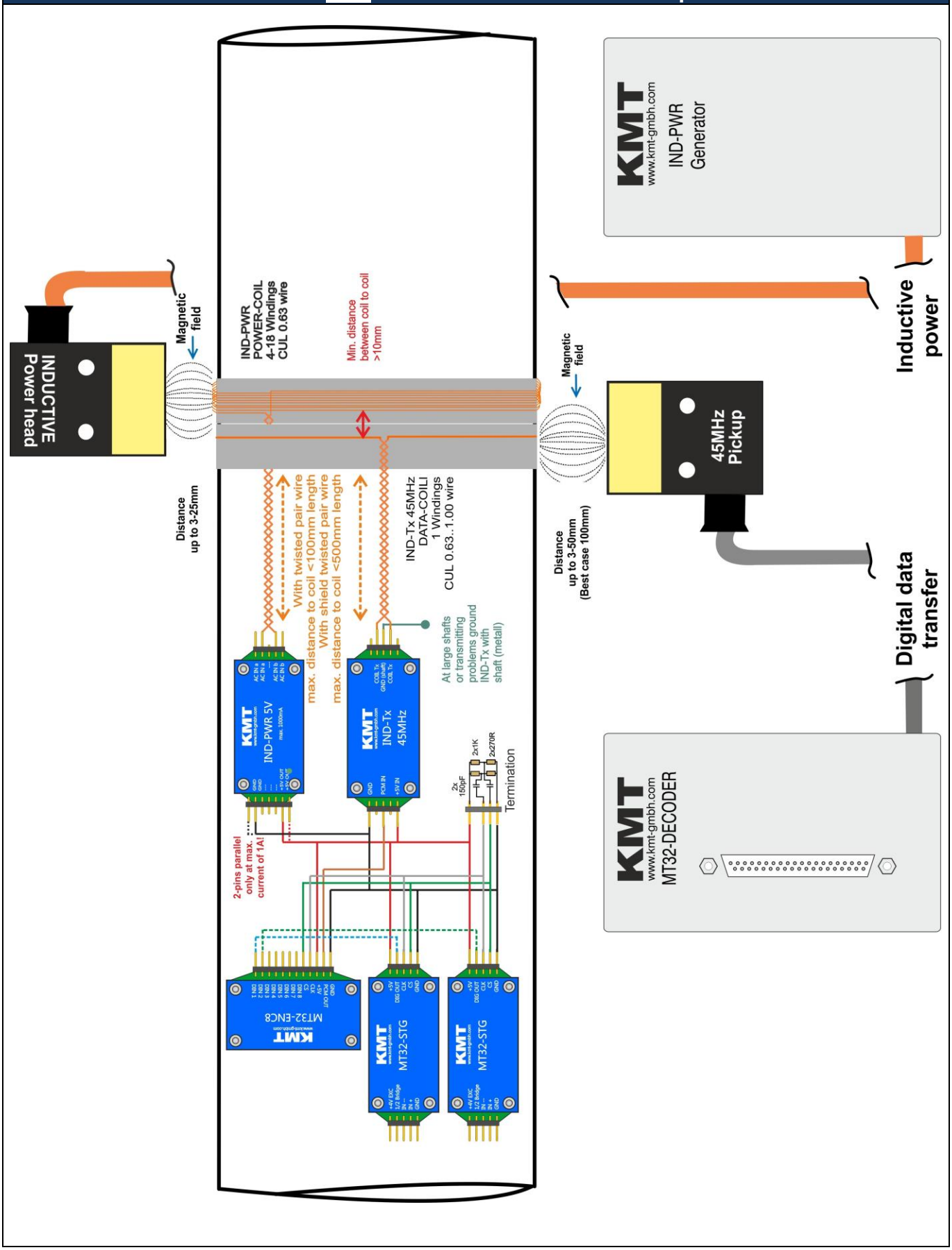




Distance dependent of current consumption e.g.:
1000mA at 5-10mm, 500mA at 10-15mm and 250mA at 15-20mm

MT32 Block diagram

IND-TX-RX with 45MHz carrier and inductive power

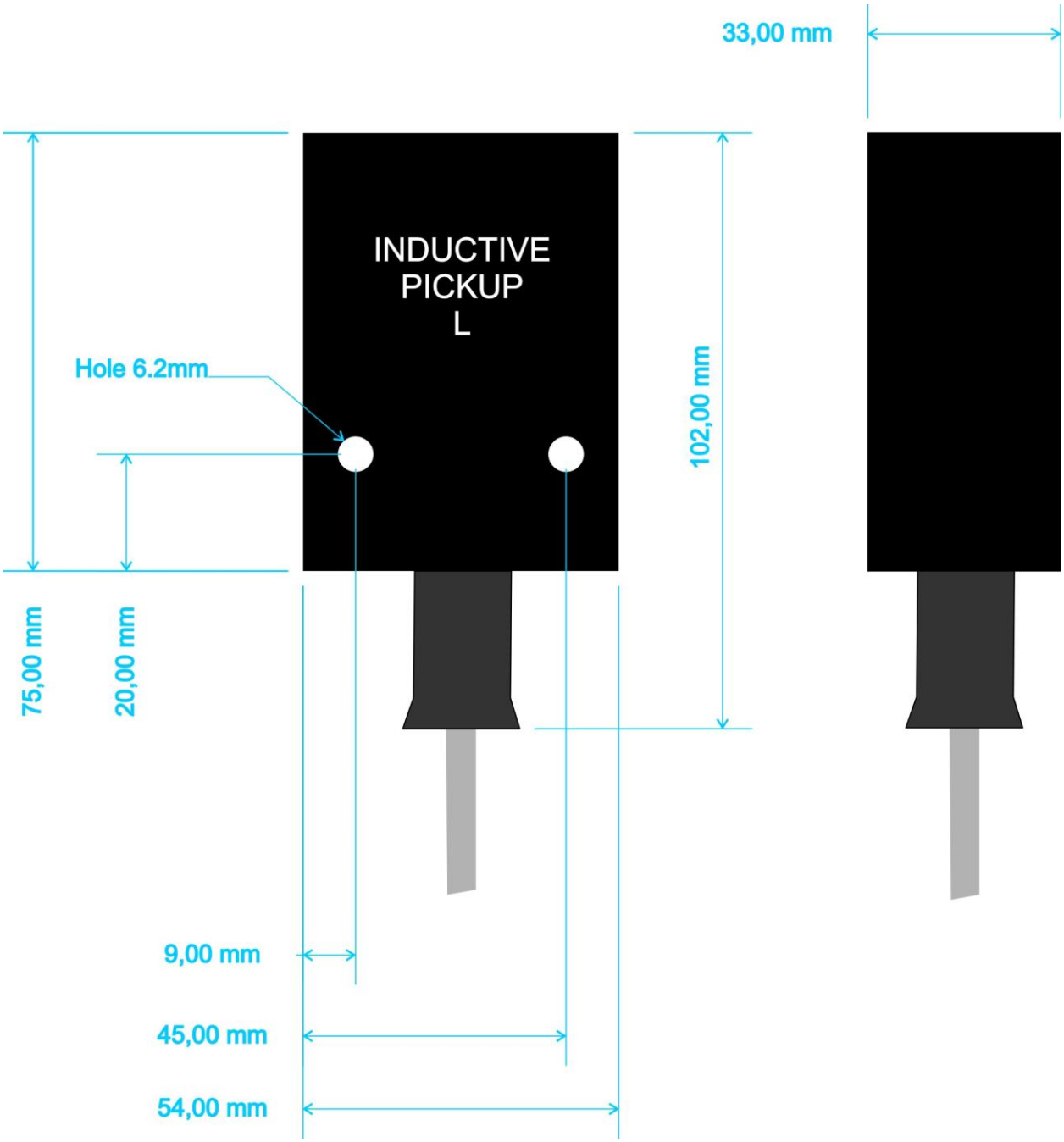


Recommend power heads:				
Diameter:	150mm	300mm	500mm	1000mm
2 -Channel	L	XL	XL	XL
4 - Channel	L	XL	XL	XXL
8 - Channel	L	XL	XXL	XXXL
16 - Channel	XL	XXL	XXL	XXXL
32 - Channel	XXL	XXL	XXL	On request

IND-PWR-HEAD-L
for diameters up to 150-200mm

Caution
Cable must unrolled for use, otherwise it will warm up!

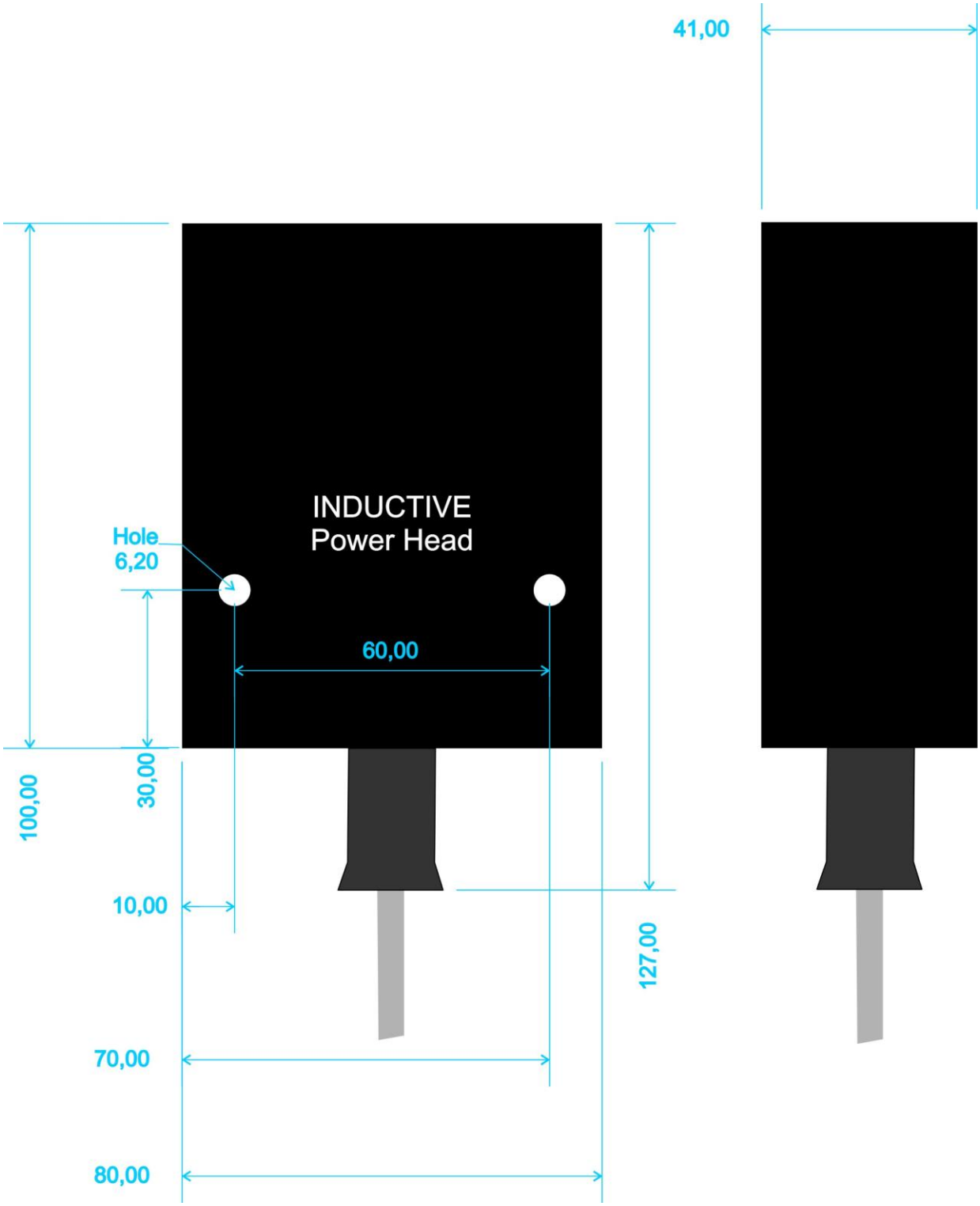
Dimensions of IND-PWR-HEAD L



IND-PWR-HEAD XL and XXL
for diameters up to 300mm with XL and 500mm with XXL
(XL and XXL have the same housing and size but inside is a larger coil at XXL version)

Caution
Cable must unrolled for use, otherwise it will warm up!

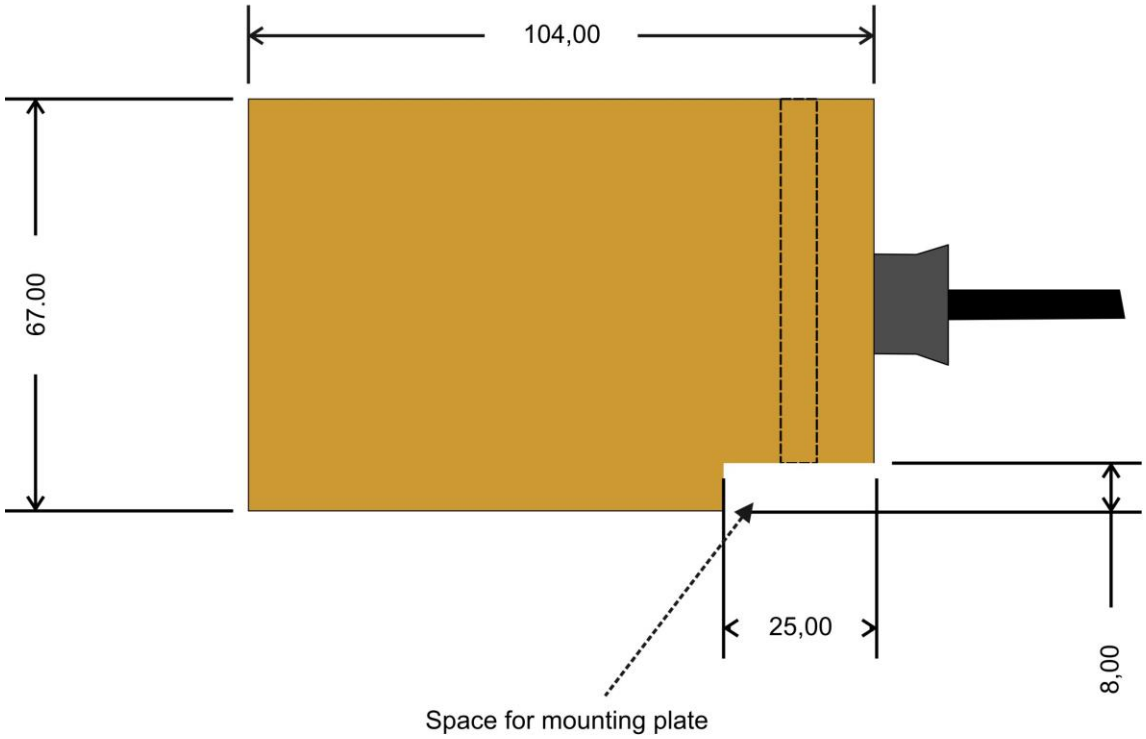
Dimensions of IND-PWR-HEAD XL and XXL

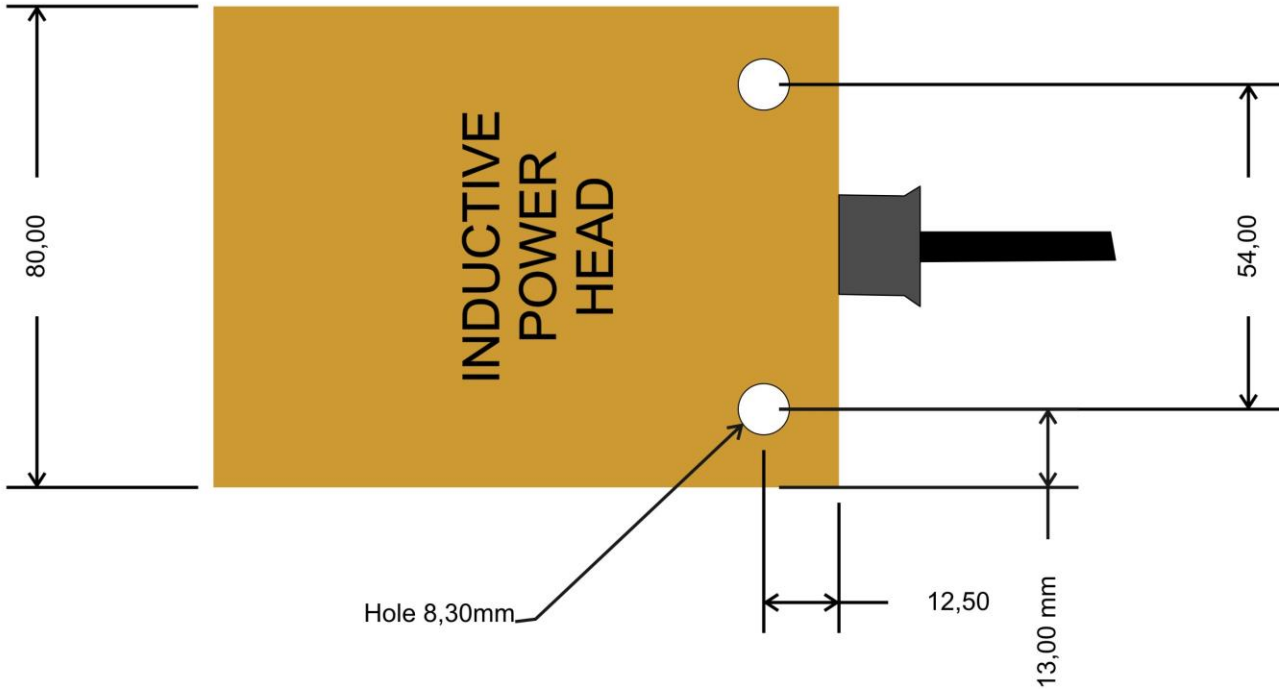


IND-PWR-HEAD XXXL
for diameters up to 1000mm

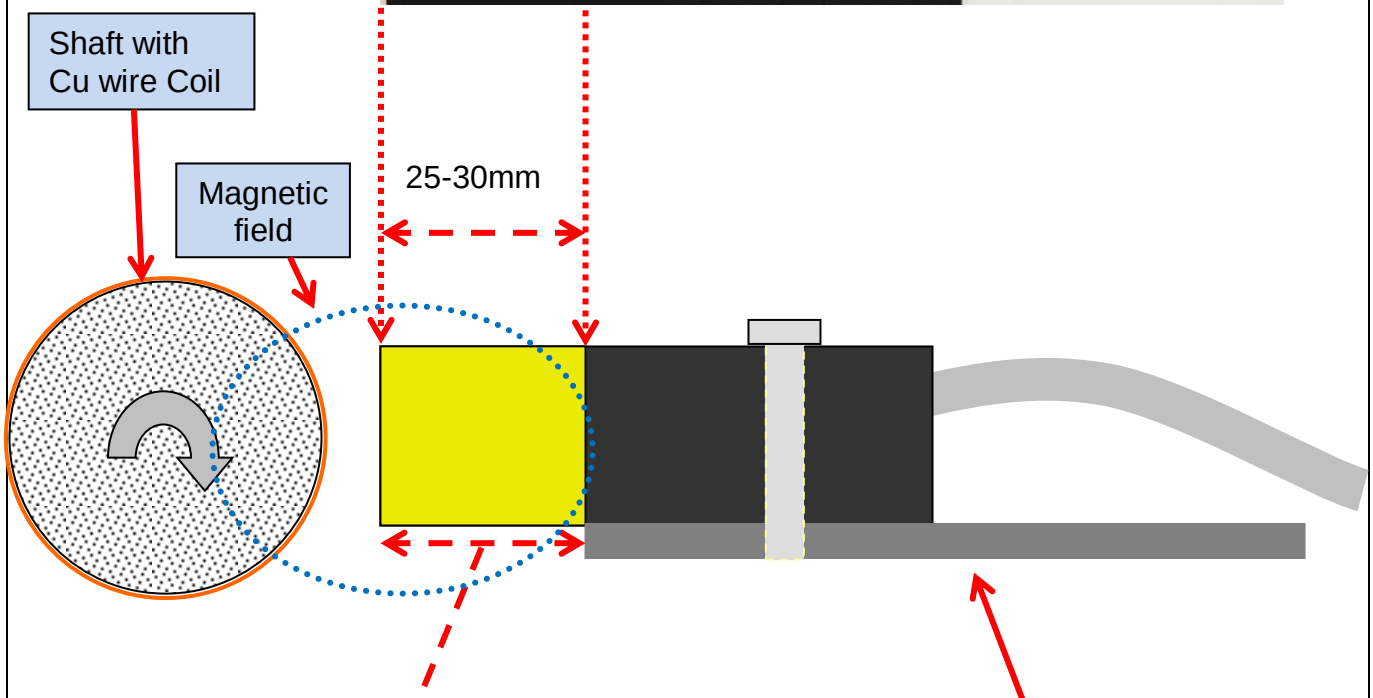
Caution
Cable must unrolled for use, otherwise it will warm up!

Dimensions of IND-PWR-HEAD XXXL



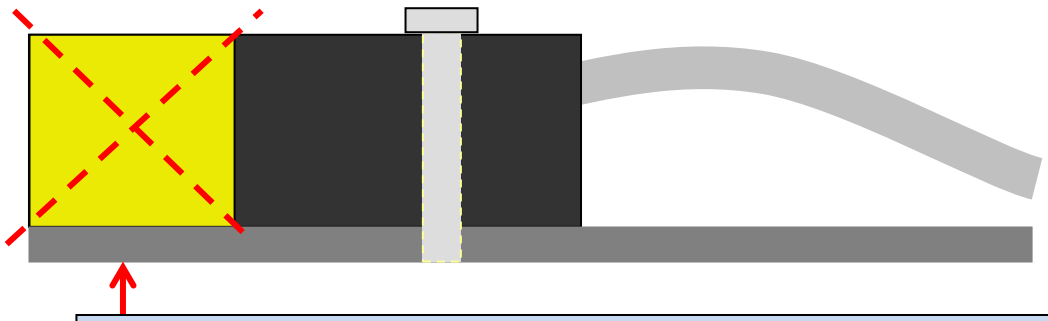


MT32-IND-PWR
Following must be considered at the mounting of the inductive power head



Don’t use for mounting any kind metal in this area (25-30mm)! Otherwise magnetic energy will flow in the metal and decrease the distance between power head and coil (on shaft)!

Example of mounting



Wrong!!! Mounting (only if metal) plate cover the active area of

Technical Data are subject to change without notice!

IND-Power generator for L, XL, XXL and XXXL Powerhead

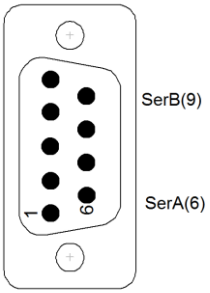
Technical data

Power output:	AC 25-35kHz for power head L, XL, XXL and XXXL
Power input:	10-30 V DC, typical 24V
Power consumption	<100 Watt, deepens of power head
Dimensions:	205 x 105 x 65mm
Weight:	1.275 kg
Environmental	
Operating:	-20 … +70°C
Humidity:	20 ... 80% not condensing
Vibration:	5g Mil Standard
Static acceleration:	10g in all directions
Shock:	50g in all directions

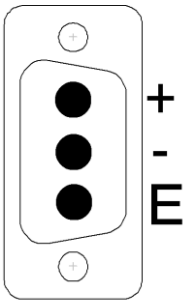
IND-PWR for L, XL, XXL and XXXL Powerhead

Pin connection

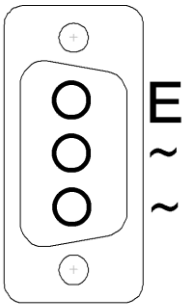
RS 485



CONTROL - Not used!



DC 10-30V
typical 24V
(up to 100 WATT*



AC 25-35kHz output
power head
*** deepens of power head)**

E= have no function

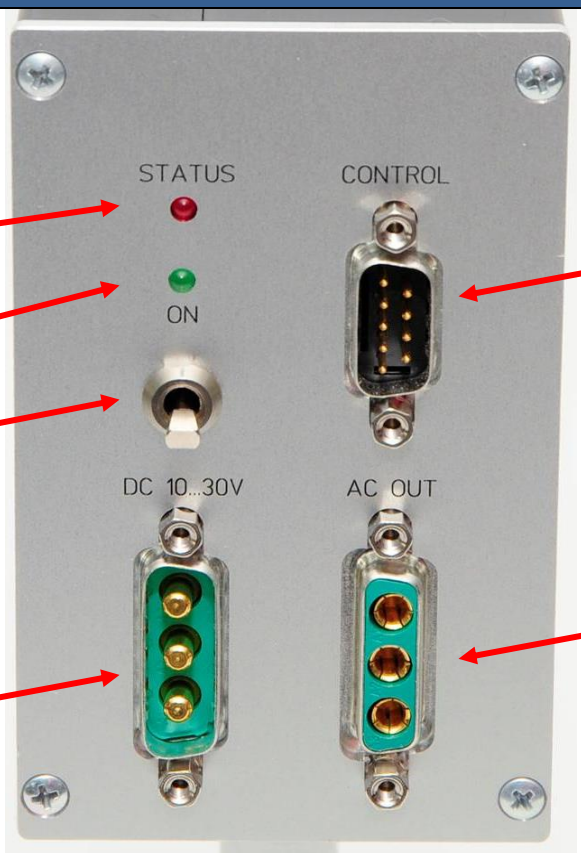
Powering and AC out

LED flashing = auto adjustment
LED ON = finish
ON= Inductive resonance freq. of power head reached!
Can take up to 20sec.!

Power control LED

Power Switch

Power INPUT
DC 10-30V
typical 24V
(up to 100WATT*)



Control out of function

AC 25-35kHz output for power head